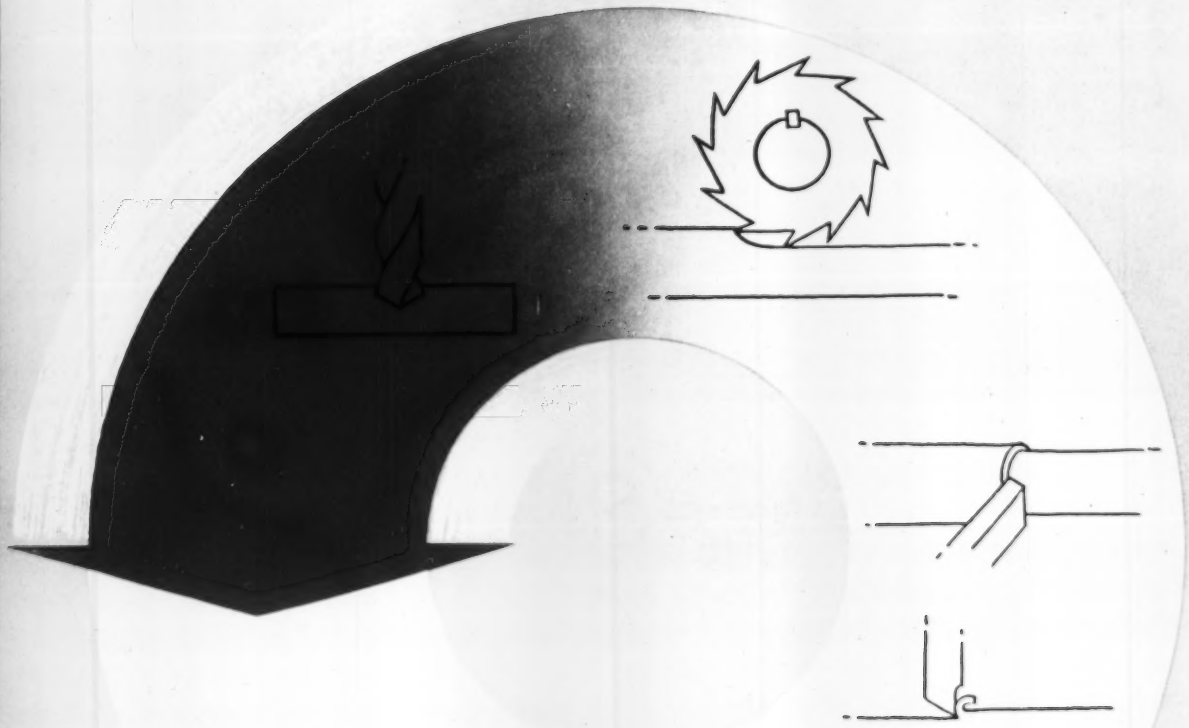
AUGUST 30, 1954

STEEL
THE WEEKLY MAGAZINE OF METALWORKING



Higher Cutting Speeds

Ready for production runs—page 64

✔ **MORE TAX CHANGES COMING**
Revisions Slated for 1955, p. 29

✔ **INVENTORS: WHAT'S THE IDEA?**
Where New Devices Are Needed, p. 40

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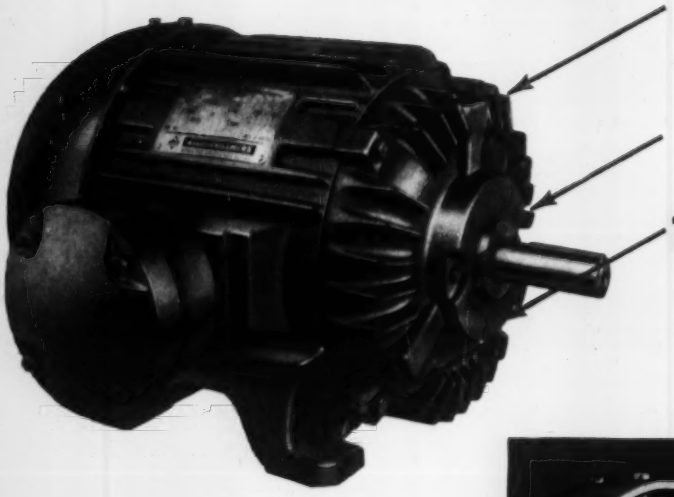
Here's motor superiority

you can see

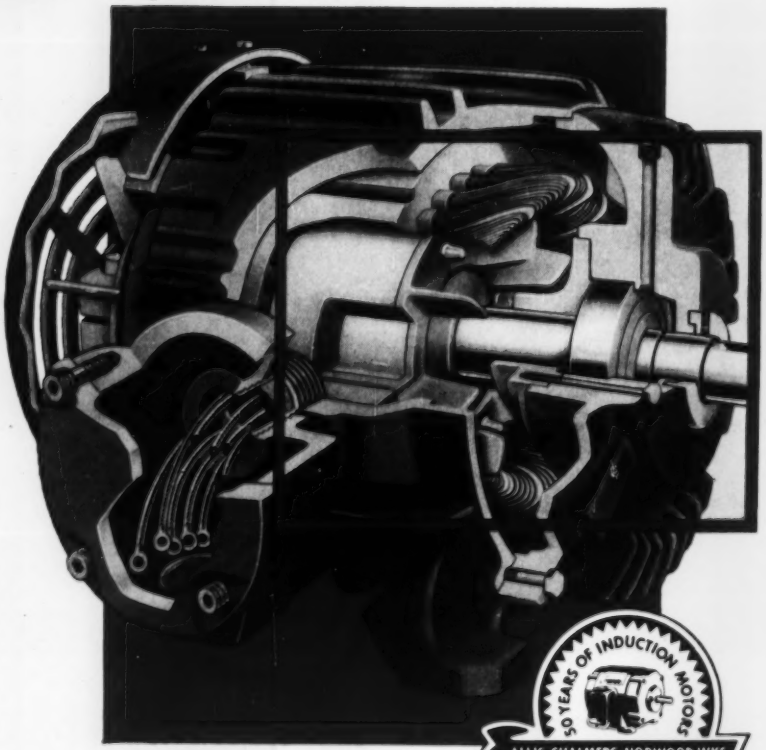


It takes 6 bolts not just 4 to give full bearing protection

THE TWO EXTRA BOLTS in the end housing of every Allis-Chalmers ball bearing motor are the proof of *extra* protection against bearing failure. These are the bolts that hold the bearing cap tightly in place against the inner face of the bearing enclosure. This cap, with its close running clearances, keeps grease from the interior of the motor . . . retains an ample supply within the bearing enclosure . . . protects the grease and the bearing against contamination from dirt and moisture.

At the outer side of the bearing, double labyrinth seals keep grease in, also keep dirt out. What's more, large grease reservoirs act as additional dirt traps.

Result? Allis-Chalmers motors pay off in longer, trouble-free bearing life, lower motor maintenance.



Get all the facts . . . judge for yourself — Compare Allis-Chalmers motors with other motors. Get the six-bolt construction that gives you complete bearing protection. For proof, see your Allis-Chalmers Office or Authorized Distributor, or write — Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

A-C ALLIS CHALMERS

A-4442

EIGHT TYPES OF FLANGED-AND-DISHED HEADS Bethlehem spins or presses these flanged-and-dished heads: elliptical, flanged-only, tank-car, obround-tank, standard, shallow, double-dished and ASME Code flanged-and-dished. Diameters range up to 144 in.; thicknesses from ⅛ in. to 3½ in. We also make standard manholes and covers, hand holes and covers, flue holes, and collar and pipe flanges. For full details, write to the nearest Bethlehem office.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Production Up 40%
Fuel Costs Down 80%
Sections of "track roller shaft" before welding
"Track roller shaft" after TOCCO Induction Welding

with TOCCO* Induction Welding

Here's the story of how one company, a large manufacturer of automotive equipment and farm implements, is using TOCCO Induction Heating to increase production and effect substantial savings at the same time.

Production Increased

When TOCCO Induction Heating replaced oxy-acetylene, output of these hollow "track roller shafts" went up from 220 to 300 pieces per 8 hour shift. The heating cycle with TOCCO is only 55 seconds as opposed to 90 seconds formerly required with gas. Result: much lower labor cost per unit.

Fuel Savings

Fuel costs nosedived from $10.50 per hundred pieces to only $1.95—about $25 per shift saved on fuel costs alone. Other important savings have resulted from a substantial reduction in down time and maintenance costs. Quality of the weld is more uniform with Induction, and hazards of explosion present with former method are eliminated.

If the manufacture of your product involves welding, heat treating, forging, brazing or the melting of ferrous or non-ferrous metals, don't overlook TOCCO as a sound method of increasing production, improving product quality and slashing costs.

THE OHIO CRANKSHAFT COMPANY

Mail Coupon Today

FREE BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. S-8, Cleveland 1, Ohio

Please send copy of "TOCCO Induction Heating."

Name_____

Position_____

Company_____

Address_____

City_____ Zone____ State_____

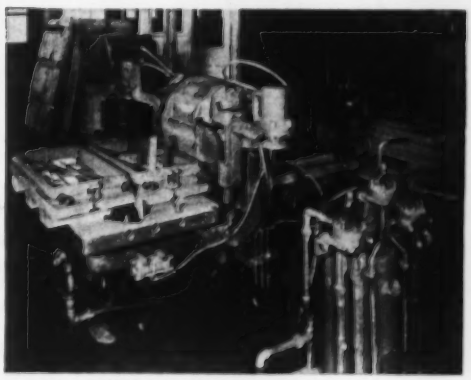
Quality becomes habit with Osborn Molding Machines

LOOK carefully at these bronze castings. They range in size from 20 pounds to 300 pounds. Quality is high, size is uniform, scrap is a minimum.

Molding costs are low now because output per man is high with Osborn's molding methods. On large molds, the 242W Molding Machine actually turns out 4 times the former output. On smaller foundry molds, production is doubled.

Results like these can be duplicated in your foundry. Your Osborn representative will survey your methods and show you how. Write The Osborn Manufacturing Company, Dept. EE-22 5401 Hamilton Avenue, Cleveland 14, Ohio.

Another example of Osborn leadership and advanced engineering



4 TIMES THE PRODUCTION on foundry molding operations taken over by Osborn's 242W Jolt-Rock-over-Draw at The Trumbull Bronze Company, Warren, Ohio.

OSBORN

MOLDING MACHINES CORE BLOWERS

Fast Movers or Shelf Warmers?

Count BOTH

(and 1,001 Other Items)

WITH

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Multiple-Unit Reset Counter

Vary-Tallies help you separate the sheep from the goats, the big ones from the little ones, the red ones from the green ones—in manufacturing, sales, accounting, researching and what not!

Vary-Tallies will do *any* counting job you want in any combination up to 6 banks high, 12 units wide (also a new single unit model). Yes, you can count on 'em or with 'em *to your profit*—note these features of construction:

- **Easily Readable from Any Angle . . . Bold figures Always Centered in Window . . . No Glare . . . Figures not Covered by Fingers in Operation**
- **Easily Portable, yet Ruggedly Built for Long Wear**
- **All Parts Corrosion-Resistant; Working parts of Hardened Steel**
- **Separate Counting Units Can be Rotated like Tires on a Car, to Distribute Wear Evenly**
- **Not Affected by Extreme Heat or Cold**
- **Individual Tag Above Each Counter-Window — Not Strip Tabs**
- **Veeder-Root Quality in Every Part**

How Can the Vary-Tally count for you? Write for news sheet and prices.

"The Name that Counts"

VEEDER-ROOT INC.

HARTFORD 2, CONNECTICUT

Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C. • Montreal 2, Canada • Dundee, Scotland • Offices and Agents in Principal Cities

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 135 No. 9 August 30, 1954

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The Chromate Finish For Producing Inhibited and Lustrous Finishes on Copper, Brass or Bronze.

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*Patent applied for

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within a

Fraction of a Degree

That's close enough for the most critical control requirements. Actual performance demonstrates that it is being done with a simple electrical unit—automatically. No attention is needed, the operator simply selects the control point on the controller.

A Gordon XACTLINE in the control circuit actuates the control before the set temperature is reached (up or down). The short on-off cycle (as short as three seconds) thus produced will give extremely close control. Because it's electrical—with no dependence on gears, cams, shafts, etc.—it is accurate and reliable.

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4628

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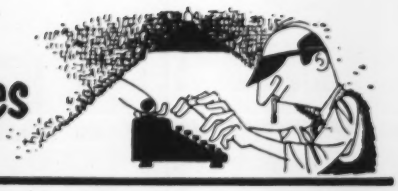
behind the scenes



Check, Mr. Caxton

In 1474 William Caxton, the first English printer, had the publishing business by the tail in what Shakespeare was pleased to call "this sceptered isle, etc." Secure in his shop at Westminster at the sign of the Red Pale, he had equipment, skill, imagination, the world for a market and no English competition. Think of all the material in manuscript form then available, and begging to be published! Think of all the diaries, and letters, and scrolls and parchments—a compendium of man's hitherto recorded knowledge, waiting for a printer! So what kind of a book did Caxton produce? Something on theology, law, philosophy, medicine, the proclamation of kings? No, indeed: he labored and brought out a book on "the game and playe of chesse."

We mention Caxton because he could have printed practically anything he wished; neither was he obliged to be overly careful about the design and appearance of his books. However, he was an excellent craftsman, and his books were so well designed they still stand today on their own merits. But speaking of today, who can number the pieces that come from modern presses? Moreover, who can number the competition? If you aim to bring out a magazine today it has to be good to stay alive: it has to be good in content, naturally, but beyond this it must be good in appearance, design, format, typography. These commendable objectives are achieved through the co-operation of typographers, art editors, skilled printers, pressmen, binders.

After All, He's From Missouri!

We will admit that the above is a devious and winding approach to the subject at hand, namely, a communication from Mr. C. C. Johnson Spink, vice president of The Sporting Goods Dealer, who wants to be shown. Mr. Spink has a firm hand on the helm of a publishing business that was founded in 1886, so it will be seen that he is no amateur. The publications with which he is associated include The Sporting News, The Quarterback, The Baseball Guide, and many other worthy ornaments of the Fourth Estate touching upon and recording the deathless exploits of professional athletes.

"I will be grateful," wrote Mr. Spink, "if you will send me a copy of your most recent issue (of STEEL). One of the advertising magazines said that your publication was one of the ten best published in their opinion. It is for this reason and this reason only—" (he wants to make it very clear that he has no professional interest in STEEL, and that we mustn't be foolish enough to list him as a circulation prospect)—"that we want to look over your magazine. We want to see if we can improve The Sporting Goods Dealer."

We can't recall receiving a more treasured and unsolicited compliment, and it gave us great pleasure to comply with Mr. Spink's request. While STEEL is the acknowledged weekly magazine of metalworking, we don't think that too much of its editorial content will rub off on Mr. Spink's sporting publications, because they already contain plenty of metallic references: iron men, steely glances, brassies, tinhorns, bronzed players, quicksilver quarterbacks—and isn't there always the coach who tells somebody to get the lead out of his pants?

Theodolites, Anyone?

Did you read that college engineering graduates are worth $1 more this year than they were last June? You can buy the talents of the diploma-in-hand type engineer for an average starting salary of $363 per month these days. Six months ago the starting salary was $373, which makes the youngsters wonder which end is up. It might be of interest, also, for you to know that during the one year period from 1952 to 1953, there was a net increase of 3,612 metalworking plants employing 20 or more. How many of these plants absorbed how many young engineers? What did those yearlings do with that extra dollar? Who's got a cigaret?

Shrdlu

(Metalworking Outlook—Page 21)

Bright good looks that **WON'T** *wear off ... value that* **CAN'T** *wear out!*

STAINLESS steel brightwork (ask about it on the car *you* buy!) has much more than surface attractiveness. It has built-in, timeless beauty. Beauty that goes all the way through—doesn't scratch off or rust off. Beauty that lasts—outlives the car itself. And beauty that's practical . . . requires no weary polishing, just ordinary washing. Wherever it's used, Allegheny Metal delivers something extra in good looks, strength, service life and resistance to rust and wear. This time-tested stainless steel has given thousands of products a competitive edge . . . maybe there's a place in *your* business where it can boost sales appeal or reduce costs. Let's help you look. ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.***

You can make it **BETTER** with

Allegheny Metal

Warehouse stocks carried by all Ryerson Steel plants

AL® TIME-TESTED STAINLESS STEEL

every study shows a handling saving

80 TONS OF SUGAR PER DAY

SAVES $30 ON EVERY CAR UNLOADED

RETURNS 84% OF ITS COST

Many companies are checking their handling problems against the American MonoRail Case Study File of "Engineered Applications." The file contains a series of case studies taken from many successful American MonoRail installations. One company saved $30.00 on every car unloaded. Another doubled metal finish production. A glass plant moved 22 tons of glass batch per hour. Another installation returned 84% of its cost in one year. These are just a few of the many studies covered.

If you want to lower your handling costs, speed up production and cut maintenance overhead, let us send you this file. Just drop us a line on your business letterhead, asking for "Engineered Applications File F-1."

AMERICAN OVERHEAD HANDLING EQUIPMENT

MONORAIL COMPANY

13102 ATHENS AVENUE • CLEVELAND 7, OHIO

CINCINNATI SHAPERS

Photo courtesy Scovill Manufacturing Company, Waterbury, Connecticut.

...serve over 2,000,000 square feet of manufacturing facilities!

In this large plant of the Scovill Manufacturing Company this battery of Cincinnati Shapers economically does a wide range of precision work on many materials, including alloys of all metals from cast iron to high acid resistant tool steel.

Tools and new machinery are produced in this department, which also does maintenance work for the entire plant. The Cincinnati Electro Magnetic Clutch and Brake also contribute to speed here, where accuracy and versatile performance are necessary.

Write for New Cincinnati Shaper catalog N-6.

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See ATLAS
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COAL CHARGERS - COKE QUENCHERS
60-TON BOTTOM DUMP ORE TRANSFER CAR

This is one of the latest Atlas Transfer Car designs arranged for modern hydraulic operation. It provides close control of the discharge and eliminates freezing of air lines in the winter. A hydraulically operated pusher arm is provided of the latest horizontal telescoping type. The brakes also are hydraulically operated and apply automatically if pressure is low or if power fails.

At this plant the car must cross over to the coke track to shift coke cars. There is no conductor rail on the coke track so the car is equipped with a motor-driven cable reel attachment, enabling it to perform this switching function. When operating on the cable reel the collector shoes are cut out and automatically raised off of the conductor rails. The cab is overhung to give the operator a line of vision down the side of the car.

THE ATLAS CAR & MFG. CO.
ENGINEERS and MANUFACTURERS
1100 IVANHOE ROAD CLEVELAND 10, OHIO

LETTERS
TO THE EDITORS

Plastic Dies Get Into Play

We'd like a tear sheet of your article, "Plastic Dies . . . Newcomer Makes Bid for Second Team" (Aug. 2, p. 84).

Robert O. Hughes
chief tool designer
Chamberlain Corp.
Waterloo, Iowa

We would appreciate receiving six tear sheets of this article . . .

J. A. Jay
General Manufacturing Unit
International General Electric Co.
Schenectady, N. Y.

• *Sent.—ED.*

Getting It Straight

In your column, "Machine Tool Topics" (Aug. 9, p. 100), under the heading, "Acquisition," you state that, "Potter & Johnston Co. . . . has taken over the manufacture of products formerly made by Newark Gear."

One would interpret from the article that Potter & Johnston will manufacture all the products formerly made by Newark Gear. Such is not the case; they will manufacture only some of the machines listed at the end of the article in question and we will continue to manufacture other products, principally gears to specifications which we have done for 50 years.

William F. Hoffman
president
Newark Gear Inc.
Newark, N. J.

Right Down the Alley

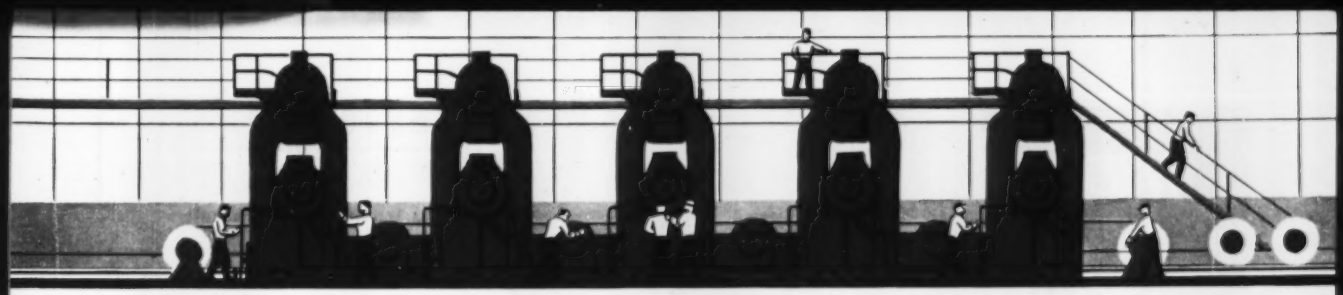
We are interested in securing 18 tear sheets of the article, "Apprentices: Assurance of Skilled Labor Tomorrow" (May 3, p. 65).

Charles A. Shelley
training administrator
Aircraft-Marine Products Inc.
Harrisburg, Pa.

• *Sent.—ED.*

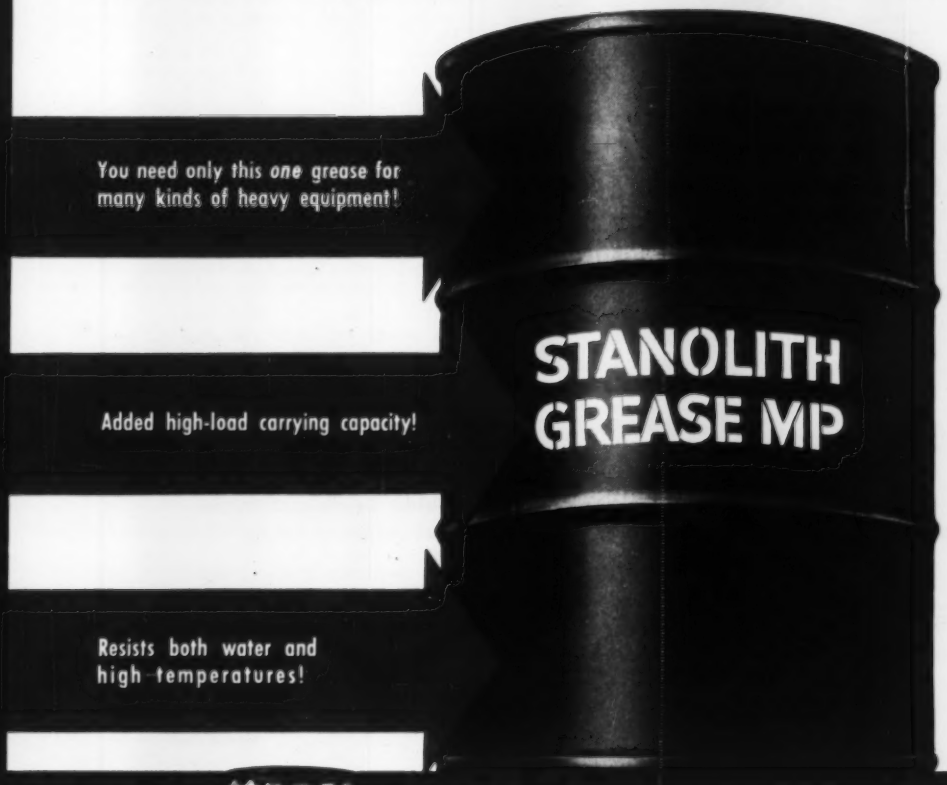
We would appreciate your sending us tear sheets on the article, "Improve

(Please turn to page 12)



Now! cut application costs and grease inventories with

NEW STANOLITH GREASE MP


You need only this one grease for many kinds of heavy equipment!
Added high-load carrying capacity!
Resists both water and high temperatures!
STANOLITH GREASE MP

Here is a newly formulated grease with such an increase in multi-purpose range that it helps you *cut application costs* and *reduce grease inventories*. Higher oil viscosity and greater extreme pressure properties make it suited for wide use in steel mills, cement mills, rubber mills, mining operations—all other heavy equipment industries.

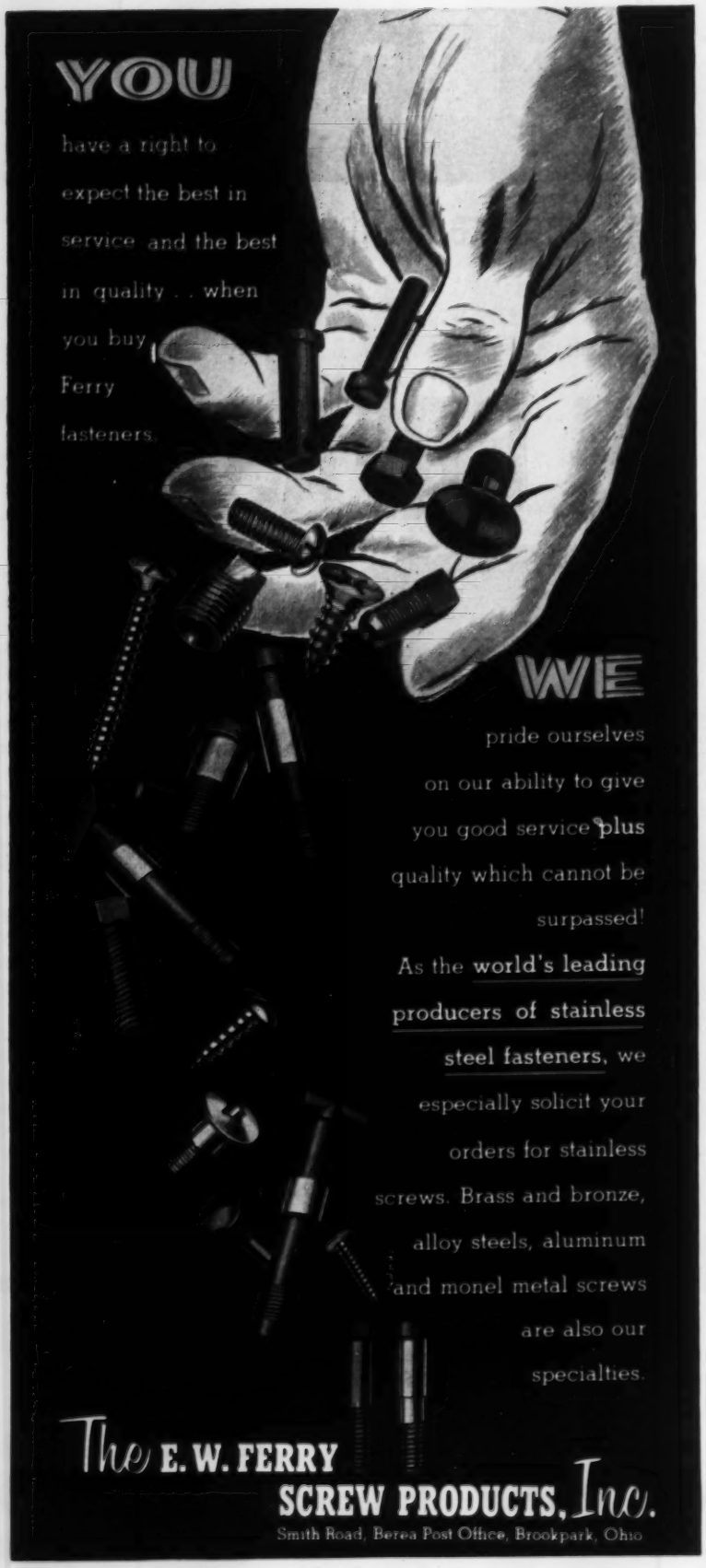
More than just an "E. P." grease, New STANOLITH MP has all of the outstanding properties of STANOLITH greases: excellent oxidation stability and good mechanical stability. It has extreme water resistance and withstands high temperatures—*it will not thin out*. For better protection of all kinds of heavy equipment, under a wide range of conditions, use STANOLITH Grease MP.

New STANOLITH Grease MP takes its place with famous STANOLITH Greases No. 42 and No. 57 to give you the most versatile collection of multi-purpose greases in modern industry.

STANDARD OIL COMPANY *(Indiana)*

Call your nearby Standard Oil lubrication specialist and let him show you how Standard's "multi-purpose" greases can save you money and help you avoid trouble.

STANDARD


YOU
have a right to expect the best in service and the best in quality . . when you buy Ferry fasteners.
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As the world's leading producers of stainless steel fasteners, we especially solicit your orders for stainless screws. Brass and bronze, alloy steels, aluminum and monel metal screws are also our specialties.
The E. W. FERRY SCREW PRODUCTS, Inc.
Smith Road, Berea Post Office, Brookpark, Ohio

LETTERS

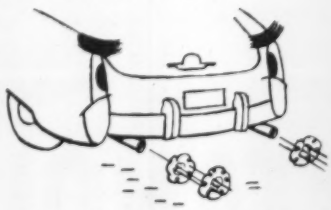
(Concluded from page 10)

Your Industrial Communications" (July 26, p. 48).

J. S. Cruickshanks Jr.
Cruickshanks Iron Works Co.
Richmond, Va.

• *Sent.—ED.*

Duals for Mercury



Your "Mirrors of Motordom" for July 5 (p. 43) mentions dual exhausts for the 1954 Mercury. Could you supply any additional information on this item? My interest is whether you had reference to an accessory supplied by the Ford Motor Co. or some other manufacturer. Any words of wisdom in this direction would be most gratefully received.

In lieu of payment for your help, may we say that all our copies of STEEL open naturally to "Mirrors of Motordom" by the time they've made the rounds. We look forward to your comments and wish to praise your style as a refreshing oasis in an area where aridity is commonplace.

R. M. McCreary
Electric Eye Equipment Co.
Danville, Ill.

• *Thanks for your "remuneration" but we would be happy to answer your question even without it. The dual exhausts for the 1954 Mercury are a factory sanctioned accessory. Although they are not actually made by Lincoln-Mercury, they are handled by Lincoln-Mercury dealers and are installed by the dealers as accessories.—ED.*

Guide Demand Durable

We find your "Guide for Steel Buyers" (Section II, July 12) of considerable assistance to us. Thanks for our copy.

M. A. Dowling
sales manager
Northern Steel Inc.
Boston

We would like two additional copies . . .

Sam Alfenbaum
president
Abbott Steel Co. Inc.
Buffalo

I can't see a thing wrong with the job you have done on the "Guide for Steel Buyers." It looks perfect to me. Congratulations.

Carl G. Browne
general sales manager
Sweet's Steel Co.
Williamsport, Pa.

Please let us have two copies of your "Guide for Steel Buyers" . . .

E. K. Clark
assistant sales promotion manager
Export Department
Republic Steel Corp.
New York

• *These and many other orders have been filled.—ED.*

NEW ALL-PURPOSE "TRICLENE"* D

(TRICHLORETHYLENE)

GIVES YOU MORE

Du Pont's solvent is unsurpassed in any vapor degreasing job!

Check these extras

EXTRA DURABILITY. With the greatest all-around ruggedness ever built into a trichlorethylene, *new* "Triclene" D has unsurpassed resistance to *all* major causes of solvent breakdown—heat, light, air, metal chlorides, and acidic materials—yet contains nothing to harm the most delicate metal surfaces.

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EXTRA CONVENIENCE. *New* "Triclene" D is an all-purpose solvent, built to give you dependable performance in any vapor degreasing job. This means you can buy just *one* brand of solvent for any type degreaser—for any class work.

Try *new* "Triclene" D and see why we consider it the greatest improvement ever made in any trichlorethylene for vapor degreasing. Your Du Pont representative will be glad to give you further details on *new* "Triclene" D. Call him today or fill out and mail coupon below.

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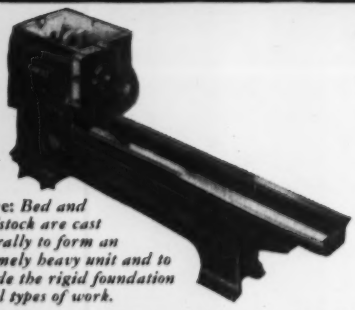
☐ Please have your representative call with the details.

Name _____ *Position* _____

Firm _____

Address _____

City _____ *State* _____



Above: *Bed and Headstock are cast integrally to form an extremely heavy unit and to provide the rigid foundation for all types of work.*

Below: *Block type ways are straddle keyed to the bed and ground in perfect alignment with the spindle. All working surfaces are hardened to 64-66 Rockwell "C".*

ACCURACY THAT DOESN'T "WEAR OFF"

Here are two good reasons why you can count on the accuracy of Gisholt Turret Lathes—now and years from now.

One-piece bed and headstock, cast as a heavy, rigid unit, reduce distortion and vibration to a minimum. Headstock is jig-bored to insure—and maintain—perfect alignment of spindle and drive shafts, with ample metal to provide the most solid support possible.

Hardened steel ways are augmented by hardened steel strips secured to the ram saddle, as well as hardened steel gibs and clamps, making an assembly that is virtually wear-proof. Its accuracy is further preserved by force lubrication.

These advantages are yours for the long life of any Gisholt Turret Lathe. Ask for complete details.

THE GISHOLT ROUND TABLE *represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.*

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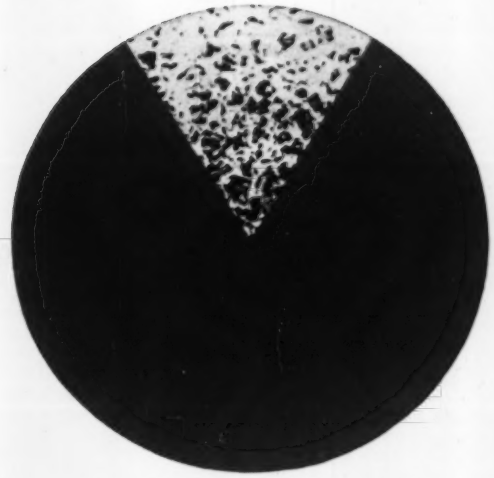
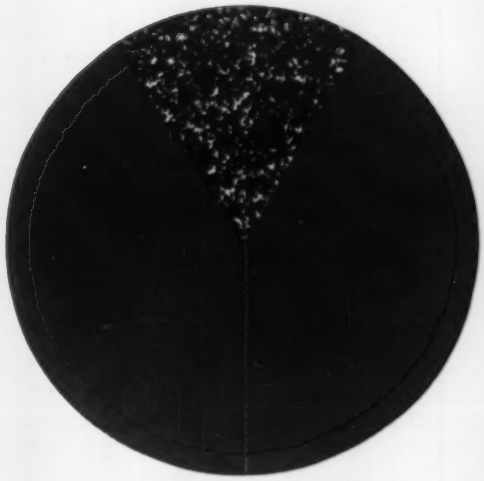


Photomicrograph showing "decarb" to a depth of .020" in the surface of a hot rolled bar of C-1050 steel—magnified 100 times.



Same bar after carbon correction annealing. Note the restoration of carbon on outer surface, also the refinement of grain structure.

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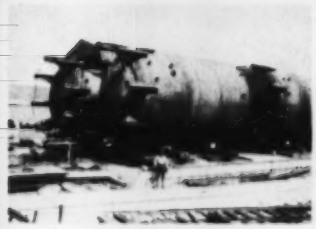

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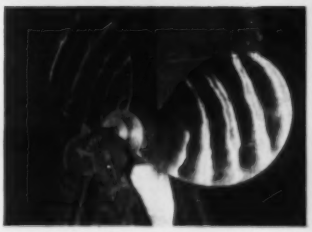

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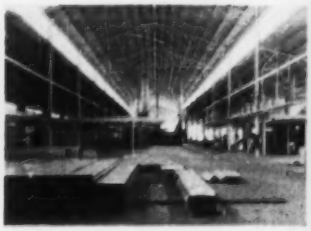

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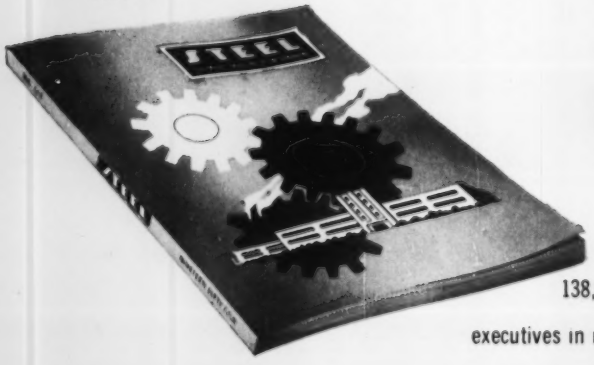

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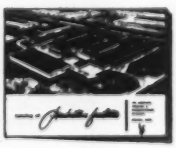

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Metalworking Outlook

Living Costs: Steady Ahead

The cost of living should hold steady—may even drop—for the rest of the year. The latest upturn of 0.1 per cent in the month to mid-July was caused primarily by the drought and rising food prices. Some West Coast cities not affected by the drought showed declines. The national index is now at 115.2 per cent of the 1947-1949 base, 0.4 per cent above a year earlier and only 0.2 per cent below the peak reached last October. The rise meant a 1-cent pay boost to about 1 million auto, aircraft and farm equipment workers who have escalator wage contracts. The increase will show up in the pay envelopes of workers at General Motors Corp., and most other companies affected, on the first payday after Sept. 1.

Tool Orders, Shipments Skid

Vacation shutdowns were a big factor in the low July new-order and shipment figures for machine tool manufacturers. But there's still little to be happy about in the month's new-order index of 123.9 per cent of the 1945-1947 base and the shipment figure of 204.7. The preliminary statistics for new orders were the lowest since May, 1950, and shipments hadn't sagged so far since September, 1951. National Machine Tool Builders' Association points out that the order backlog is now only 3.4 months at today's production pace. The ideal backlog is about six months.

Railroads Feel the Pinch

In the first six months, rail freight car loadings dropped 13 per cent from year-ago levels, a decline that has continued into August. The decline has already prompted the railroads to lower rates on some commodities, notably steel. That's because the roads have been hardest hit in their steel traffic. Look for more rate adjustments to come.

No Dip in West Europe

Western Europe has not experienced even the moderate economic decline that is going on in the U.S. Industrial production in the first half for European countries this side of the Iron Curtain was 7 per cent higher than in the like period last year. And output promises to hold at that rate for the rest of 1954. Significance: Every major recession or depression in the U.S. has been paralleled closely by a world recession or depression. There's no world recession now. That alone helps support President Eisenhower's claim that an American business readjustment is nearing its end.

More Military Spending

Watch for more military spending abroad this year than last. Last year it rose $500 million to $2.5 billion and may hit nearly $3 billion in 1954. The figures include expenditures under the government's off-shore procurement program, private spending by servicemen stationed overseas and money spent by military establishments. Significance: The spending has

Technical Outlook—p. 63 Market Outlook—p. 101

helped the economies of foreign countries, accounting last year for 15 per cent of all foreign sales of goods and services to the U.S.

Two-Thirds To Go

United Steelworkers' "Operation Follow-Up" is picking up steam, but it's still a little behind the customary pace. Usually the union's 1500 individual contracts are negotiated fairly promptly after the relatively few basic steel agreements have been signed. The nonbasic contracts follow the basic pattern closely in most cases. The complexity of insurance and pension adjustments in the basic steel contract this year has caused the delay. As of last week about 65 per cent of the contracts were still to be signed, but few strikes are expected.

Metalworking Fires Up

Some $456 million worth of property of all types was burnt up in the first half. That 5-per-cent-increase over the same period in 1953 was caused primarily by greater losses from fires in metalworking plants. Since 1942 large-damage fires in metalworking have increased 17 times. Between 1942 and 1953, 175 metalworking fires brought losses of $250,000 or more. National Board of Fire Underwriters says the disastrous trend will continue unless there's better fire prevention.

Growing Market for Nickel

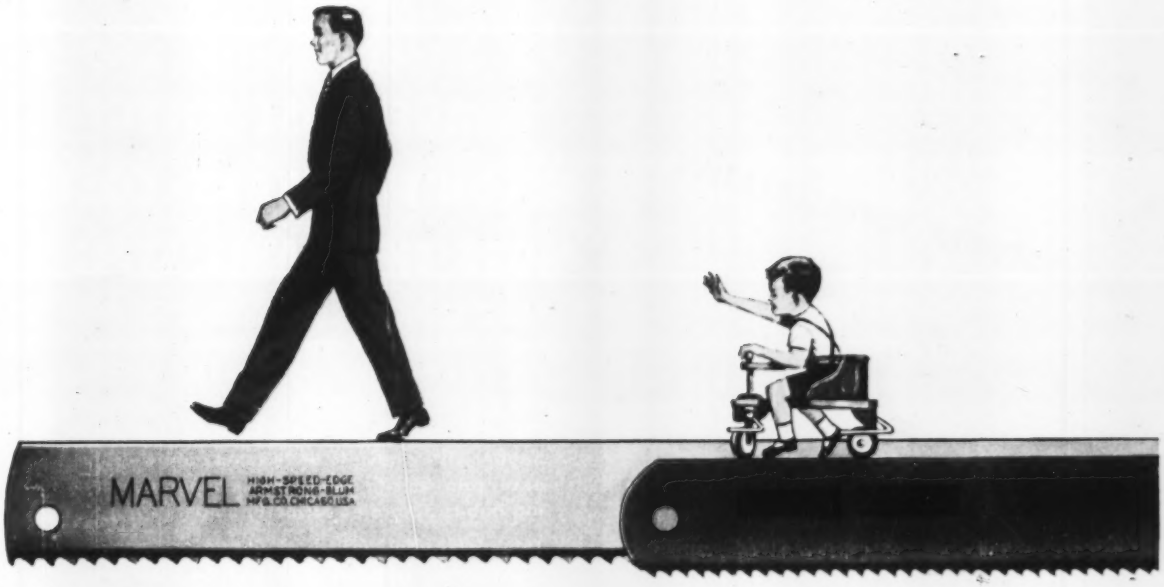
One reason why nickel is the only large-production metal that is still hard to get: It's being used in ever increasing quantities by the growing electronics industry. International Nickel Co. of Canada Ltd. supplied 7 million pounds of the metal for electronic components last year.

Straws in the Wind

Look for the CIO electrical workers on Sept. 2 to accept, reluctantly, the General Electric Co. offer of a 2.68 per cent wage boost, the same already granted to other unions the company deals with . . . H. K. Porter Co. Inc. is believed to be the principal behind the offer to buy Laclede-Christy Co. common stock . . . Chairman Edward F. Howrey reports the Federal Trade Commission has eliminated about 50 procedural steps to speed up disposition of cases . . . Ohio's axle-mile tax will be the main target of a House Interstate & Foreign Commerce Committee investigation of the "breakdown in motor vehicle reciprocity between the states from the imposition of highway use taxes" . . . Inland Steel Co. plans to build a $6-million office building in the Chicago loop.

This Week in Metalworking

More tax changes affecting business will come up in 1955 (p. 29) . . . World Steel Corp. seeks a government O.K. to use nuclear power in electric steelmaking (p. 31) . . . The 20,000 manufacturers' agents in business today are 120 per cent more numerous than in 1948 (p. 32) . . . Kaiser Aluminum & Chemical Corp. will build an aluminum sheet and foil plant on the Ohio river near Ravenswood, W. Va. (p. 33) . . . Plumbing manufacturers are cleaning up with 5 per cent better sales this year than last (p. 34) . . . Where inventive opportunity knocks (p. 40).



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Good Batting Average

Last Monday when President Eisenhower spoke to the people of the 83rd Congress, he was able to make a much better report than most politicians had thought possible. Of the 64 measures which his administration had hoped would be enacted, Congress passed 54. This is a batting average of .844, which the President called "pretty good going in any league."

It is indeed! It is particularly "good going" in view of the extraordinary handicaps against which his administration and the 83rd Congress were forced to work. One of these handicaps was the President's lack of experience in politics. Another was the wafer-thin majority of the President's political party in House and Senate. Another was the untimely death of Senator Taft. Had he lived, the Eisenhower program would have been spared many embarrassments. Finally, there was the handicap of bucking the smear tactics of certain columnists, commentators and others who, fat on 20 years of New Deal and Fair Deal patronage, lose no opportunity to criticize bitterly anything the new order attempts.

Eisenhower and the 83rd Congress overcame these handicaps because in many instances they put principle ahead of politics—even in an election year. The enactment of a law that substitutes flexible price supports for fixed price supports for certain farm products is one of the finest victories of integrity over demagoguery in our government in decades.

In revising the tax code the administration and the Congress made up for 75 years of inaction, neglect and buck-passing. In authorizing the participation of the United States in the St. Lawrence waterway, they erased 30 years of prejudiced opposition. In measures dealing with social security, housing, taxes and many other reforms, they demonstrated a desire to be liberal in human affairs, while remaining conservative on monetary and economic matters.

Some people in industry have been dragging their feet because they fell for some of the propaganda of the last year that Eisenhower was a political novice and too indecisive to exercise firm leadership. He has demonstrated that these charges are false. He has developed not only political astuteness but also effective leadership.

E. L. Shaner

EDITOR-IN-CHIEF

THE SPLURGE FOR '55: This week in Mirrors of Motordom (p. 43) Floyd Lawrence surveys the new automobile models that will be introduced in the near future. He believes that in the 1955 cars will be found the greatest array of significant new features in design and

engineering that motordom has ever presented to the public in a single season.

Of course, this extraordinary number of refinements in styling and mechanical design and construction is but another indication of the terrific battle that is going on in the automobile industry. In recent months, the increased share of the total markets supplied by General Motors and Ford has left an appreciably smaller share to be divided among Chrysler, American Motors, Packard-Studebaker and Kaiser-Willys.

Naturally, the desires of General Motors and Ford to retain their high ratings or improve them and of Chrysler and the independents to increase their share substantially provide a powerful incentive to bring out new and better models. Hence the splurge for 1955!

REMARKABLE INCREASE: In some branches of the metalworking industry there always has been a question in the minds of many manufacturers as to whether a machine, piece of equipment or products can be sold most effectively by the manufacturer's own sales force or through manufacturers' agents. Of course, much depends upon the character of the product to be sold, size and geographical features of the market and many other factors.

Nevertheless, something must have occurred during the last five years to focus attention upon the advantages of distributing through manufacturers' agents. It is estimated that from 1948 to 1953 (p. 32) the number of these agents has increased from 9000 to 20,000. Could it be that the unprecedented dispersal geographically of industrial consumers is largely responsible for this remarkable increase?

BEST SELLERS FOR '54: Last week persons whose names appear on one of the mailing lists of the Superintendent of Documents, the U.S. Government Printing Office, received a 54-page booklet entitled "Representative Government's Best Sellers for 1954." In a foreword, it is explained that "this special catalog contains synopses of more than 450 representative government best sellers on a number of diversified subjects. . . These publications offer the reader precise, accurate, well-written and interesting information in many fields of endeavor."

Among the 26 "fields of endeavor" listed are child care, Communism and Fascism, home repairs, engineering, health and safety, labor, law, military history, cooking, writing and farming. Among the 450 representative "best sellers" are these titles picked at random: "Technique of House Nailing," "Building with Logs," "Crawl Spaces," "Teachers Abroad," "Use of Concrete on the Farm," "Safety for the Household," "Make It of Leather," "Television as an Advertising Medium" and "Cross Channel Attack."

DUPLICATOR, IMITATOR: These 450 "best sellers" are only a small fraction of the publications put out by our government. Among the thousands offered free or for sale are many for which Uncle Sam has an unquestioned right to publish and distribute. At the same time a far greater number duplicate superior publications which are put out privately. In fact, a substantial volume of the U.S. Government Printing Office's publication business consists of unjustified government competition with private enterprise.

On the subject of safety, the National Safety Council—a private, nonprofit organization—is the final authority. Anything the government puts out on safety must be a duplication of the National Safety Council's booklet or an inferior imitation. Many of the government's "How-To-Do-It" booklets are simply the rehash of information progressive trade associations had developed for their members.

International Correspondence Schools, Scranton, Pa., is a more logical publisher of many of these 450 "best sellers" than is Uncle Sam.

PUBLIC LOSES TWICE: Whenever Uncle Sam's publishing activities encroach upon those which belong to commercial private enterprise, the taxpaying public suffers a double loss. All promotional work of the division of public documents of the U.S. Government Printing Office and all of the shipments of publications go through the Post Office Department free as "Official Business." Thus the government's publishing business contributes to the deficit of the Post Office.

Secondly, in the rare event that the Printing Office seems to make a departmental profit on the sale of a publication, the end result is a loss to taxpayers. If the publication were put out by a commercial private concern, it would pay taxes to the government and it would also pay postage. Also, the taxpayers would benefit from the removal from government payroll of persons engaged in needlessly duplicating services rendered by private companies.

the "right" alloy steel that failed

A manufacturer wisely chose a certain alloy steel for key strength parts to avoid breakdown and the possibility of human injury. He specified an alloy that should have been right for the job. Yet, the "right" alloy failed. Why?

Since one alloy looks just like another, it might have been a case of mixed steels or it might have been poor response to heat treatment because of the variations that occur between different heats within the same specification. But here at Ryerson we have a plan to protect you from these hazards.

To avoid danger from mixed steels and to tell you exactly what to expect from heat treatment, Ryerson—and only Ryerson—puts every heat of alloy steel through 8 quality-control steps. Every heat is carefully selected, its anlysis verified and its hardenability established by a series of end-quench tests. Every bar is spark tested, positively identified with its own heat symbol and separately racked with other bars from the same heat. And finally, every shipment is carefully inspected and accompanied by a Ryerson Alloy Certificate which includes all test data to confirm analysis and guide heat treatment.

All this extra quality protection is provided by Ryerson at no extra cost to you. So to be sure of your alloy steel—sure of type and quality, sure of what the steel will safely do—call Ryerson for *Certified* Alloy Steel.

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled & cold finished
ALLOYS—Hot rolled cold finished, heat treated
STAINLESS—Allegheny bars, plates, sheets, tubes, etc.
TUBING—Seamless & welded, mechanical & boiler tubes
STRUCTURALS—Channels, angles, beams, etc.
PLATES—Many types including Inland 4-Way Safety Plate
SHEETS—Hot & cold rolled, many types & coatings
MACHINERY & TOOLS—For metal fabrication

RYERSON CERTIFIED STEELS

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

"ANOTHER QUALITY PRODUCT MADE FROM INLAND COLD ROLLED SHEETS"

VICTOR
GASKETS AND OIL SEALS

Production V. P. O. W. Clifton points out to Steel Buyer, Harold North, a severe draw on one of the over 600 different types of oil seals manufactured by Victor.

"INLAND COLD ROLLED SHEETS *set the standard at Victor"*

—says Harold North, Steel Buyer at Victor Mfg. & Gasket Co., Chicago, Illinois.

When Victor Mfg. & Gasket Company, one of the world's best known manufacturers of high quality gaskets and oil seals, buys steel for their oil seal division, they specify "Inland cold rolled sheet quality" on the order.

"Uniform drawing quality is an absolute must with us," says O. W. Clifton, Production Vice President, "or we risk expensive die breakage with resultant machinery 'down-time' and production loss. Over the years we have found Inland's cold rolled sheets are consistently uniform and well within our tolerance range. We can depend on them to deliver the specific drawing quality requirements we set up for them, time after time."

If uniform drawability or thickness is one of the problems in the manufacture of your steel products, it will pay you to talk over your requirements with one of Inland's steel sheet specialists. They've built a reputation on solving the "tough ones."

INLAND **COLD ROLLED SHEETS**

INLAND STEEL COMPANY, 38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul • Davenport • St. Louis • Kansas City • Indianapolis • Detroit • New York

NEA

Under Secretary of Treasury Marion B. Folsom Reveals . . .

More Tax Law Changes Coming in 1955

FURTHER revisions in the federal tax law face next year's Congress.

The tax bill signed into law Aug. 16 is only the first step in achieving what President Eisenhower calls a "fair system with minimum restraints on sustained economic growth."

More Coming—In at least six areas the administration is committed to work on changes, says Under Secretary of the Treasury Marion B. Folsom. Slated for attention are these problems: Capital gains and losses, depletion and depreciation, income from foreign sources, taxation of co-operatives and tax-exempt organizations, excise tax provisions, penalty taxes on intercorporate dividends and consolidated returns, oil and mining industry problems, and simplification of pension, profit-sharing and stock bonus provisions. Some of these subjects were reserved for further study and not presented in the 1954 Revenue Code; others couldn't be revised in the new code because of congressional objections or lack of time to work out compromises.

"We know the job of tax revision is not complete," Mr. Folsom told an American Management Association briefing session in New York. "In a growing and changing economy it is necessarily a continuing task." The remarks on "How the New Tax Law Affects Your Company" before 600 executives marked the first and perhaps last public appearance by Treasury officials at this time to explain the new law.

Major Aims—The new revenue code is not aimed at tax reductions, said Mr. Folsom (although reductions made during 1954 total $7.4 billion, largest total dollar reduction in the country's history). Its chief purposes: 1. Remove inequities; 2. reduce restraints on economic growth and creation of jobs; 3. close loopholes and 4. clarify the law.

Hottest arguments still center on the depreciation and depletion section of the new bill (see the story on p. 30). The new allowances, Mr. Folsom declared, will be particularly helpful to small firms in purchase of new equipment.

An Exception—Used machinery was excluded, though reconstruction costs can be written off, because the new law's purpose is to stimulate investment in new and modern equipment. Treasury officials believe that the law will have an effect on the price of used equipment: Write-offs will be shorter, and thus buyers of used equipment can get newer models more cheaply.

Taxpayers can now treat research or experimental expenditures as a deduction and not chargeable to capital account. Two major changes with respect to net operating losses extend the period

during which a net operating loss may be absorbed from seven years to a total eight-year span, and alter the method of computing the amount of net operating losses which may be deducted.

Level Payments—For corporations with tax liabilities over $100,000, the pay-as-you-go system will prevent Treasury feast-famine and will allow companies to finance currently. Concentrating tax collections in the first half of the year was found to complicate budgetary and national debt problems.

The new system will eliminate a step: Most big companies now finance currently by purchase of tax-anticipatory notes. Only 20,000 companies, or less than 5 per cent of U. S. corporations, are subject to the new schedule, but they account for 85 per cent of the country's total corporate income tax liability.

One loophole favoring mergers was closed. Buying a company that's lost money to cut tax liability is blocked by eliminating carryover when more than 50 per cent of the stock is bought within two years and the loss corporation doesn't continue in the same business.

Dissenter—A dissenting voice was heard at the AMA session when tax attorney J. H. Landman stated that the depreciation laws don't go far enough. Rapid methods of taking depreciation "cannot have a national salutary economic effect," he believes, because taxpayers in nonmanufacturing would not directly benefit unless they could get necessary supplemental financing, and because heavy long-life plant and equipment of 30 years or more are "actually not benefited enough in annual dollar deductions to make the new methods more attractive than the old one."

A plea for stronger tax departments as a part of top management was made by Alan L. Gornick, Ford Motor Co. In a number of companies total tax costs are now exceeded only by direct labor costs and raw material costs, he said, but few companies are making any real effort to meet the opportunity to manage their tax affairs so as to keep present taxes to a minimum.

Remaining Undepreciated Balances on $10,000 Unit

End Of	Straight Line 5%		Double Declining Balance		Sum of the Digits	
	Deduction	Balance	Deduction	Balance	Deduction	Balance
1st Year	$500	$9,500	$1,000	$9,000	$952	$9,048
2nd Year	500	9,000	900	8,100	905	8,143
3rd Year	500	8,500	810	7,290	857	7,286
4th Year	500	8,000	729	6,561	810	6,476
5th Year	500	7,500	656	5,905	762	5,714
6th Year	500	7,000	591	5,314	714	5,000
7th Year	500	6,500	531	4,783	667	4,333
8th year	500	6,000	478	4,305	619	3,714
9th Year	500	5,500	431	3,874	571	3,143
10th Year	500	5,000	387	3,487	524	2,619
11th Year	500	4,500	349	3,138	476	2,143
12th Year	500	4,000	314	2,824	429	1,714
13th Year	500	3,500	282	2,542	381	1,333
14th Year	500	3,000	254	2,288	333	1,000
15th Year	500	2,500	229	2,059	286	714
16th Year	500	2,000	206	1,853	238	476
17th Year	500	1,500	185	1,668	190	286
18th Year	500	1,000	167	1,501	143	143
19th Year	500	500	150	1,351	95	48
20th Year	500	0	135	1,216	48	0

Source: National Machine Tool Builders' Association.

What Tax Law's Depreciation Terms Mean

Despite complicated terminology, new options open to businessmen for depreciating equipment are simple and flexible. "Useful life" is still fixed by controversial Bulletin F

IF YOU HEAR someone talking about "double declining balance" and "sum of the digits," he isn't giving you double-talk. He's merely discussing two of the options contained in the new tax law for writing off capital equipment. Before entering the conversation you had better become acquainted with the terms, however.

Double—Under the old straight-line method, which is still available at the taxpayer's option, an equal amount is written off each year. For example, 5 per cent a year for equipment with 20 years' taxable life. Under double declining balance, 10 per cent of the value is written off the first year, with 10 per cent of the undepreciated balance charged off each remaining year of the taxable life. It is obvious that never can the complete value of the equipment be written off, but about two-thirds of the value is depreciated in the first half of the taxable period.

Sum — The sum-of-the-digits method is a little more complex in arithmetic, but it accounts for the complete depreciation of the equipment. Under this method, each annual depreciation charge is a fraction of original cost, the numerator of which is the "reverse year" of the unit's life and the denominator is the sum of the digits of that life. For instance, on a 20-year write-off, the denominator would be 210, the sum derived by adding 1 + 2 + 3 etc. up to 20. The numerator for the first year would be 20, for the second year 19 and so on down to 1. The value in all cases is the full value of the equipment. This method allows about three-fourths of the value to be depreciated in the first half of the equipment's taxable life.

The new law is completely flexible in the choice of options. A manufacturer may even switch methods after any tax year to take advantage of high write-offs in the first half of the equipment's life without penalty of relatively small depreciation charges over last half. However, the taxable life of the

equipment is still determined by Internal Revenue Service's controversial Bulletin F.

Comparison—The table on p.30 shows how the three principal methods of tax depreciation would work out on a $10,000 piece of equipment over a 20-year period. Two other methods — declining balance at 150 per cent of straight line and double declining balance 10 years with straight line thereafter—are also permitted in the new law.

Trickle of Nickel

Production has begun at Hanna Nickel Smelting Co.'s new Oregon plant

GOVERNMENT stockpiles will soon be nickel richer.

By mid-1955, Hanna Nickel Smelting Co.'s Riddle, Oreg., smelting plant should be producing 16 million pounds of contained nickel a year in the form of ferronickel ingots. Experimental output from No. 1 melting furnace at the multi-million-dollar facility has already begun.

Into Stocks—By fall, No. 2 melting furnace should be in operation with two more to be ready by mid-1955. Present plans call for the entire output of what will be the nation's only large-scale nickel producer to go into the government stockpiles.

Ore for the operation will be supplied by the Hanna Coal & Ore Corp. at the rate of about 750,000 wet tons per year. Open-pit mining will be employed. An 8300-foot aerial tramway will bring the ore down the side of Nickel mountain to the smelter site in the valley below. Sixty-four 50-cubic-yard cars will move at 500 fpm delivering about 2000 tons of ore per eight-hour shift.

Powerful Job—When the installation is complete, there will be four 14,000-KVA melting furnaces; a 9000-KVA auxiliary furnace; and two 2500-KVA P-T refining furnaces. All will be supplied by Pittsburgh Lectromelt Furnace Corp. The estimated power requirement of 65,000 kw will be supplied from the Bonneville dam project.

Steelmaking with Atoms

World Steel Corp. applies for permission to use atomic reactor in new steel plant

AN EARLY INDUSTRIAL use of atomic power may be in steelmaking. World Steel Corp., Chicago, has applied to the Atomic Energy Commission for authority to use an atomic reactor in its proposed new plant.

World Steel plans to use the reactor for making steam to operate electric generating turbines. It is estimated that one pound of uranium in a reactor could produce as much energy as 1500 tons of high-grade coal. The electric power will be used to operate electric furnaces which use largely scrap steel.

Plant production will be confined to sheet metal, and the output rate is estimated at 250,000 tons annually.

World Steel was incorporated about a year ago by Peter S. Pedersen, president. Mr. Pedersen is also president of MPH Mfg. Corp. Inc. and its affiliate, Wonder Building Corp. of America.

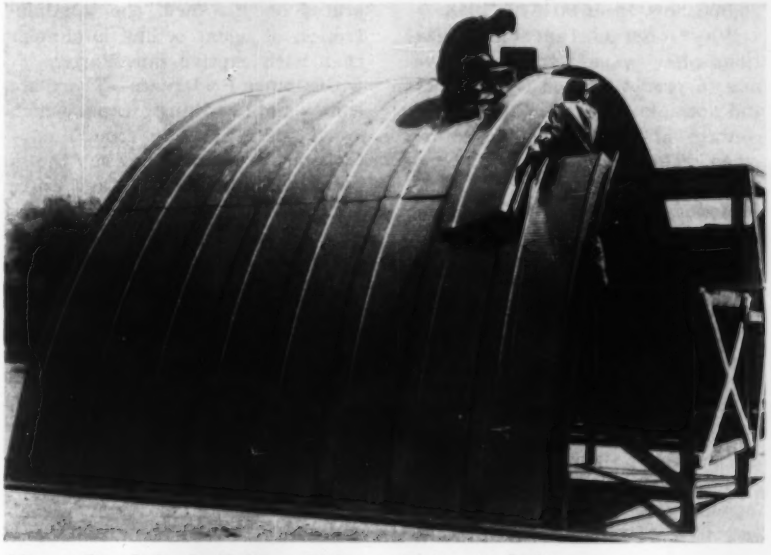
Engineers on the project include Arthur Bassin and James Braxton of World's staff and Jay J. Seaver Engineers, Chicago. The facilities will include a continuous galvanizing line.

Fast Tax Write-Offs Allowed

Railroads and steel companies dominated the government's latest list of quick tax write-off allowances. During the two-week period ended August 11 the Office of Defense Mobilization granted 56 certificates of necessity.

Largest write-off went to Southern Pacific Co., San Francisco; two certificates authorizing 80 and 85 per cent of portions of $13,162,590 for passenger and freight cars.

Youngstown Sheet & Tube Co., was authorized to write off 50 per cent of $8,186,000 of metallurgical coke facilities at the fast rate; U. S. Steel Corp. was granted amortization of 50 per cent of $6,132,000 for research development facilities; Westinghouse Electric Corp. was granted 75 per cent of the $7,854,550 cost of research and development facilities.



New Prefab Building Brings Patent Suit

Only a standard wrench and drift pin are needed to erect Inland Steel Products Co.'s new corrugated steel building. Called the Milcor LOK-RIB Building, it is assembled of one-piece panels which serve as both structural members and exterior sheathing. However, MPH Mfg. Corp. Inc. and its affiliate, Wonder Building Corp. of America, claim the building is not so new. They've filed a patent infringement suit. Inland officials have denied the allegation

Manufacturers' Agents Help Hold the Line In Selling Costs

Dollar Sales of Manufacturers' Agents*

1954	$3,600,000,000
1952	$3,900,000,000
1948	$4,200,000,000
1939	$1,400,000,000

What They Sell*

Metalworking Products	54.6% of All Agents' Sales
Nonmetalworking Products	34.2% of All Agents' Sales
Miscellaneous	11.2% of All Agents' Sales

And What They Earn*

Metalworking Products	6.6% Av. Commission
Nonmetalworking Products	5.1% Av. Commission

* Based partially upon *The Manufacturers' Agent as a Marketing Institution* by Thomas A. Staudt; partially upon "Management Aids for Small Business, Number 50," by the Small Business Administration; and partially estimated by STEEL.

MANUFACTURERS' AGENTS have more than doubled in number in the past six years to about 20,000 now from 9048 in 1948.

Why? Because agent organizations offer manufacturers an avenue to predetermined selling costs and possible reductions in the percentage of selling cost to selling price. The agent can do that due to the way he operates.

Modus Operandi — The agent works on a fixed commission. Out of that percentage (it can go as high as 25 or 30 per cent on large metalworking equipment but averages out as in the table above) comes all of the agent's expenses and his profit. Thus the manufacturer knows in advance what his selling costs will be on any particular amount of sales.

Besides the predetermined selling cost, the good agent has several other distinct advantages to offer his principals (manufacturers). First, the good agent has familiarity and recognition in the trade he serves. Secondly, the agent usually handles more than one line and thus has a background in a broader field than the company salesman in many cases. Next, the established agent offers an immediate entry into a market. And finally, because an agent operates on his own, the administration of agent selling is simpler than with captive sales forces.

Customer Preference—There are some metalworking firms which much prefer to buy from manufacturers' agents. They say that's because the agent can stand up to his principals for his customers' rights. Since any one of an agent's principals can at worst take away only a percentage of his income, the agent does have a certain freedom of speech not available to the company salesman.

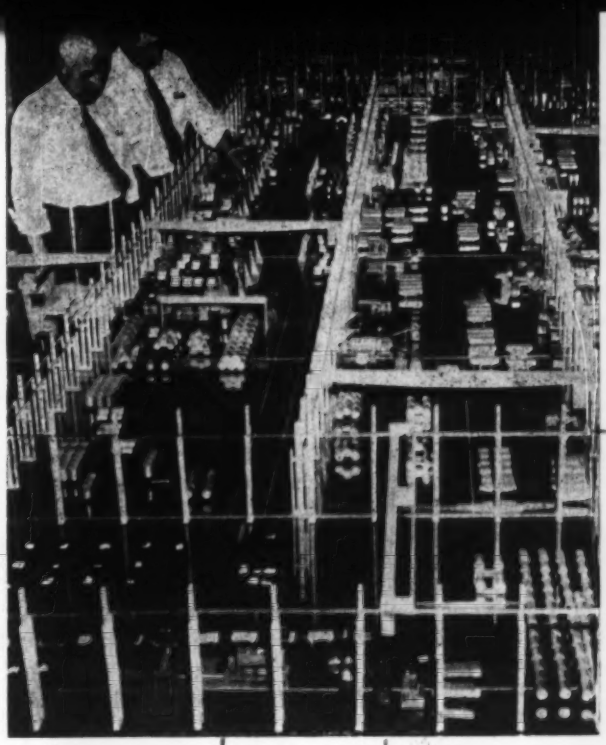
Despite the growth in the number of agents in the country and their evident and growing popularity, agents' sales are not immune to the general drop off in business volume this year. A. X. Schilling, executive secretary, Manufacturers' Agents National Association, estimates volume of business done by agents will be off 7 per cent in 1954 from 1953.

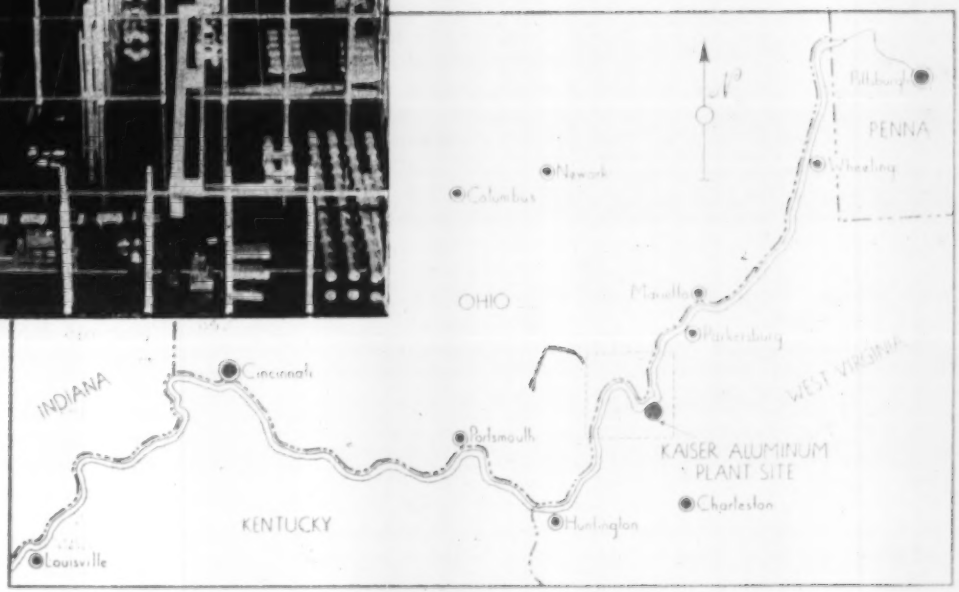
Disadvantages, Too—And agent-type selling does have some disadvantages, too (selling expense high on large-volume sales, control over selling techniques limited, only part-time representation provided). For a brief outline of agent selling, manufacturers can get the Small Business Administration's "Management Aids for Small Business, Number 50." For a more complete profile of agent selling, manufacturers can obtain the Commerce department's *The Manufacturers' Agent as a Marketing Institution* by Thomas A. Staudt, assistant professor of marketing at Massachusetts Institute of Technology's School of Industrial Management.

Manufacturers interested in starting some of their distribution through agents can go to MANA for help and information. For example, more than 25,000 copies of MANA's Standard Form of Agreement have been distributed to manufacturers since 1948. SFA gives suggested clauses for contacts binding manufacturers and agents which protect both parties.

MANA, like agentry itself, is growing constantly. There are now more than 1600 members. Another proof that agents come into their own and multiply during the times of the "hard sell."

Kaiser Aluminum To Move East with New Sheet Mill





KAISER ALUMINUM & Chemical Corp. plans to invade the East with its third aluminum fabricating plant—a sheet and foil rolling mill to be located on the Ohio river near Ravenswood, W. Va.

The plant will be built in three stages, the first to begin around Jan. 1, 1955, and finished around mid-1956. This initial installation will have capacity of 72 million pounds of light gage sheet and foil and will be supplied with reroll stock from Kaiser Aluminum's Trentwood, Wash., plant.

Round Two—The second stage of construction, to begin on completion of the first, will make the new plant a fully integrated rolling mill with 250 million pounds of sheet and foil capacity. Aluminum pig will come from Kaiser Aluminum's Chalmette plant near New Orleans.

Third stage of the construction program "will depend upon development of future demand for aluminum sheet products."

Plant's Purposes—Aims for the new plant are primarily two: To speed up deliveries to Kaiser Aluminum's established customers (Kaiser's other sheet and foil facilities are on the West Coast); open up new markets for these aluminum products in the East and Midwest. D. A. Rhoades, vice president and general manager of Kaiser Aluminum, says that, based on the firm's experience in other plant areas, the Ravenswood mill "will present an inducement to new manufacturers of aluminum products to locate and others to expand their present operations in the Ohio River valley, thus adding more new products and more jobs in the entire region."

The other eastern Kaiser fabricating facilities are in Newark, O., (rod, bar, wire and electrical conductor) and in Halethorpe, Md., (extrusions).

Who Pays—Funds for the first Ravenswood Works unit have been obtained by rescheduling the maturity dates of present obligations with the same institutions that financed the $230-million Kaiser Aluminum expansion program.

Climax Widening Research

Climax Molybdenum Co., New York, announces a $250,000 expansion in its research program, mainly for research in molybdenum chemicals and in molybdenum-base alloys for high-temperature use.

The expanded chemical program will be devoted mainly to research in moly-sulphide, in molybdenum catalysts for upgrading low-octane gasoline and in the synthesis of new molybdenum chemicals.

Clean-up in Plumbing Goods:

SALES 5 PER CENT HIGHER THAN LAST YEAR

RIDING THE CREST of a wave of homebuilding, plumbing fixture sales are 5 per cent higher than last year.

Household construction continues at a record-breaking pace; population moves to the West guarantee constant demand for new housing; and a growing number of families own their homes. As a result, first-quarter plumbing fixture shipments totaled $68.8 million. Sales in 1953 were about $261 million.

Better Housed—New residential construction outlays of $13.8 billion in the first seven months of this year were 4 per cent above last year, the Commerce department reports. In the first seven months of this year, housing starts numbered 683,500, compared to 678,100 in the same 1953 months.

With no sign of a slackening in the building pace, 1954 will probably become the sixth consecutive year of more than 1 million starts.

Homeowners—That's encouraging news to fixture makers, but statistics of home ownership are more significant. "A man who owns his own home is much more likely to modernize plumbing facilities than a man leasing living quarters," comments Robert W. Lear, general marketing manager, American Radiator & Standard Sanitary Corp., Pittsburgh.

A 1940 report taken by the Bureau of the Census showed that 40.7 per cent of housing units were occupied by owners. A comparable survey in 1950 reported an owner-occupancy of 51.2 per cent. Fixture producers believe this trend is continuing.

Plumbing Supplies — Listed as plumbing fixtures are toilet facilities, bathtubs, kitchen sinks, laundry trays and fittings connected with these items. Most toilet facilities are made of china, bathtubs can be either cast iron or enameled steel. Laundry trays are usually cast iron. Fittings are brass or zinc. Sales have been so brisk that some china and brass fittings are in short supply.

Best selling plumbing fixtures are those which wear out, such as water closets, washstands and sinks. With use of some metals declining, fixture makers report growing rivalry between metals for fixture applications. Aluminum producers are experimenting with the light metal for applications in valves and fittings of plumbing installations.

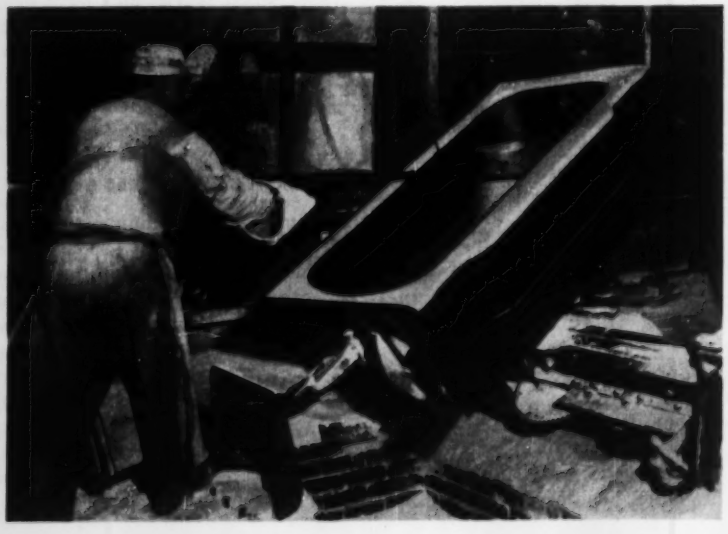
Added Attractions — Late last year indications pointed to a decline in homebuilding in 1954. That dip didn't occur, and what's more, architects added such new features to their homes as extra and more colorful bathroom facilities. Distributors agree that the trend to color and to additional units should continue. The rapidly growing motel industry constitutes another improving customer of plumbing fixture manufacturers.

With total sales above last year, fixtures for new buildings make up about 70 per cent of total shipments, reports John Madden, president of James B. Clow & Sons, Chicago. The remainder goes into replacement of facilities. That's 5 per cent higher than replacement sales in 1953, which was another good year for new construction. In a slow building year the ratio is usually 50-50.

Strong Market—Balance of the year holds no worries for plumbing goods producers. "Prospects for the latter half of this year appear very strong," say officials of Richmond Radiator Co., Metuchen, N. J. They add that the first six months' sales of bathtubs this year surpassed sales in the first half of last year.

And the long-term outlook is just as encouraging. Estimates are that population will hit 200 million by 1975. "Those people will have to live somewhere, and they'll need our products," say plumbing fixture salesmen as they send for more order books.

American Radiator & Standard Sanitary Corp.



Pattern Set for Mobilization Base

Combining much of previous thinking, an ODM omnibus order sets guide for mobilization base. Men as well as plants are to be held in readiness

THE DIE IS CAST for the long-awaited government plan for maintaining the mobilization production base in the new Defense Mobilization Order VII-7.

Fundamentally the new order, effective Aug. 25, 1954, decides there will be a "broad" mobilization base rather than a "narrow" one (concentrated in a few facilities). It also makes clear that procurement contracts won't be let solely for the purpose of keeping a defense facility in readiness. High-cost facilities and others judged to be necessary in the mobilization base will get what's known as maintenance contracts upon completion of current defense work. The order decides finally that key personnel as well as key facilities will be held in a stand-by status.

Counting Up—That plan could cost the government "several hundreds of millions of dollars a year" when it gets rolling, says an Office of Defense Mobilization spokesman. But it's been judged the best way to keep the critical wheels in defense industries well oiled for any future emergency.

Here's how the plan works: High-cost defense producers will be eased out of current production; they'll be re-examined to see whether they are still required in the mobilization base at all. If they are, they—along with low-cost producers who have finished up their current defense work—will be qualified for a maintenance contract.

No Mops and Brooms—Maintenance contracts will provide for retention of a group of key managers, engineers and skilled workers. Besides keeping the production facilities in top condition, these nucleus groups will be expected to assist in modernizing their facilities to keep up with new developments, and perhaps they may be called upon to do research and development work.

The Defense department will start the program by selecting facilities for maintenance contracts from producers of about 1000 key military items carried on the department's Preferential Planning List. Items on that list account for about 85 per cent of annual spending for military hard goods.

Coming Later — The Atomic Energy Commission and the Maritime Administration will work out their own lists in co-operation with ODM later. With military production slowing down rapidly, it's necessary for the Defense department to act first and quickly in order to keep key defense facilities and personnel organizations together.

The same criterions for selecting plants to be included in the mobilization base apply as before: Wanted primarily are facilities for making long-lead-time, complex-processing items. But the new mobilization order also covers facilities for producing quantity items such as ammunition, tanks, trucks and guns.

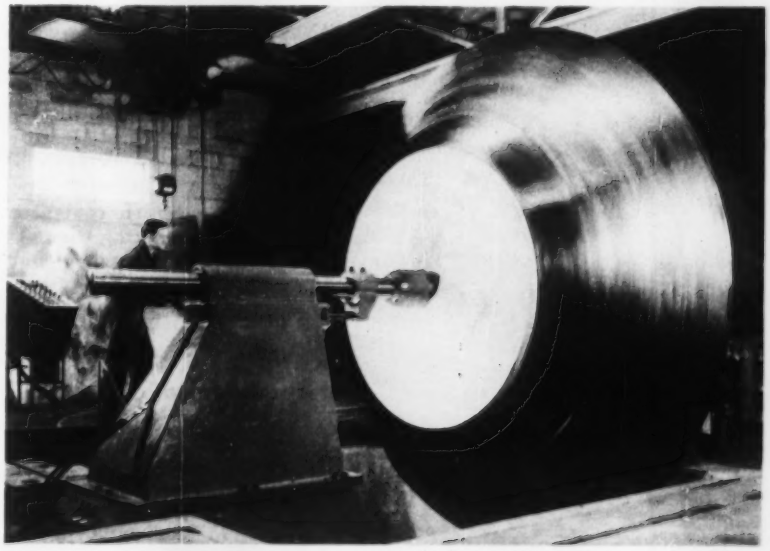
ODM Sets New Expansion Goal

Office of Defense Mobilization has consolidated six expansion goals into one new goal which provides quick tax write-off allowances covering facilities "whose products are necessary to meet military and atomic energy requirements."

The six old goals closed down by ODM action covered facilities for production of military aircraft, metal ammunition boxes, military vehicles and engines, military electronic items, military photographic equipment and ordnance facilities.

These facilities will still be eligible for quick tax write-offs provided "there is found an existing or prospective shortage to produce the materials or services required by the Atomic Energy Commission or military service," ODM said.

Also covered by the new goal are "one-of-a-kind" military or atomic production facilities for which expansion goals have never been set as well as certain specific types for which expansion goals have been closed.



Spectacular Spinner

Lathe to spin just about anything but a yarn has recently been installed at Phoenixspun Division of Phoenix Products Co., Milwaukee. The giant among spinning lathes can spin steel up to ⅜-inch and aluminum to ¾-inch thickness and can spin a cone 72 inches deep. Control is electric. Spinning tools are hydraulically actuated. Phoenixspun engineers designed and built the lathe

By E. C. KREUTZBERG *Washington Editor*

Revisions in Contract Termination Rules Not Enough, Contractors Say

ALTHOUGH the revisions just completed by the Department of Defense in Section VIII (Termination of Contracts) of the Armed Services Regulation represent an improvement, they do not go far enough, say contractors.

Most important change allows prime contractors and subcontractors to settle subcontract termination claims up to $10,000 without approval by the contracting officer. This is helpful as the previous limit on such settlements was $1000. Furthermore, disposition of termination inventory in such cases may be made without review by the contracting officer.

Disposition of termination inventory is liberalized in all cases. Disposal of government-furnished property is facilitated by eliminating the requirement that supplies must be surplus before disposition is authorized. Contractors may return contractor-acquired property to their suppliers to secure reimbursement for restocking charges or 15 per cent of the cost of returned inventory, whichever is less. Where proper use of retained contractor-acquired property requires moving of inventory, a contractor

may now be reimbursed for "reasonable" cost of handling and transportation. Authority of contracting officers to permit disposition of termination inventory by negotiated sales has been substantially enlarged.

Other Changes Helpful . . .

The disputes clause has been revised to conform to Public Law 356, 83rd Congress. This would permit a contractor dissatisfied with his termination settlement to go to court.

Another change provides that the clauses entitled "Notice and Assistance Regarding Patent Infringement" and "Patent Indemnity" may be included in contracts for construction on real property and shall be included in every supply contract in excess of $5000 which calls exclusively for standard commercial supplies. But these clauses are not to figure in contracts involving smaller amounts.

As before, the revised section lists 31 allowable costs which embrace all the usual manufacturing costs including advertising, also certain experimental and developmental expenses, interest on borrowings, necessary costs continuing after termination, and reasonable accounting, legal, clerical and related expenses connected with termination. Also, as before, 14 items of cost are not allowed. For instance, losses on other contracts are disallowed, preventing the balancing of profitable against unprofitable contracts as far as termination settlements are concerned.

Protection Limited . . .

As has been the case, there is no protection for the contractor against GAO questioning his right to clear the plant and retool for normal civilian production. And there is no protection against GAO questioning price redeterminations of fixed-price contracts. So there is no assurance against the possibility of long delays in finalizing termination settlements.

What contractors would like is enactment of a Contract Settlement Act such as that which was passed by Congress in 1944 to spell out termination of World War II contracts. The services would like such a law, but Congress has hesitated in view of objections by the comptroller general. In such a law, contractors would want authority to settle subcontractors' claims with finality (except in cases involving charges of fraud) without any limit on the amount of the claim. They feel that if subcontractors claims could be settled on the basis of normal commercial procedure the government would not suffer in the long run.

Legal Language Confusing . . .

In the opinion of contractors, termination procedure suffers because a great many subcontractors —in fact all of the smaller ones— are confused by the legalistic language in which the many provi-

sions in Section VIII are couched. The subcontractors do not always get from their primes such assistance as they need because the prime contractors are busy with their own problems.

"During World War II," points out E. K. Gubin, Washington attorney who specializes in termination cases, "the armed services conducted schools at which businessmen were instructed in termination procedure. In addition there was published a 'Contractor's Guide' which advised the businessman what to do when his contract was terminated. It would help to a better understanding of termination procedure if such a school and such a manual were revived."

King Size
BOILERS
Big boilers for utilities and general manufacturing? B-L's tube supported wall design and Texad* finishes eliminate enclosure structural steel and steel plate casings. That saves plenty on the original cost! Performance? Better than ever!
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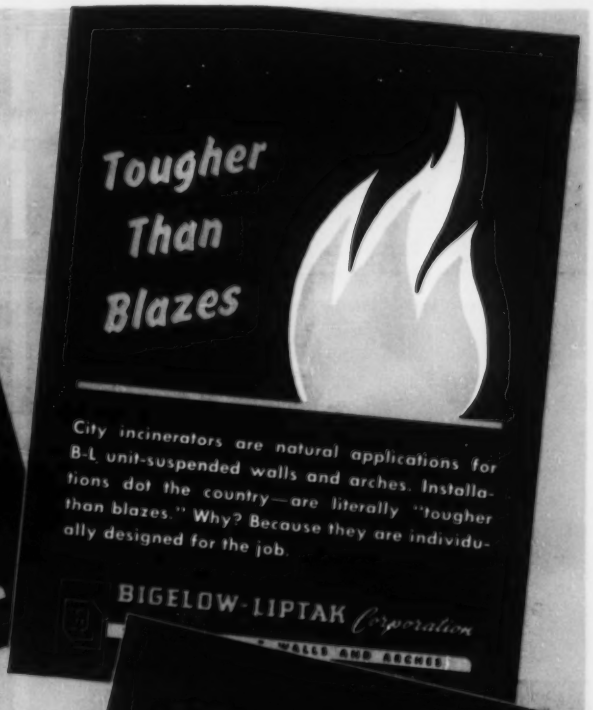
Tougher Than Blazes
City incinerators are natural applications for B-L unit-suspended walls and arches. Installations dot the country—are literally "tougher than blazes." Why? Because they are individually designed for the job.
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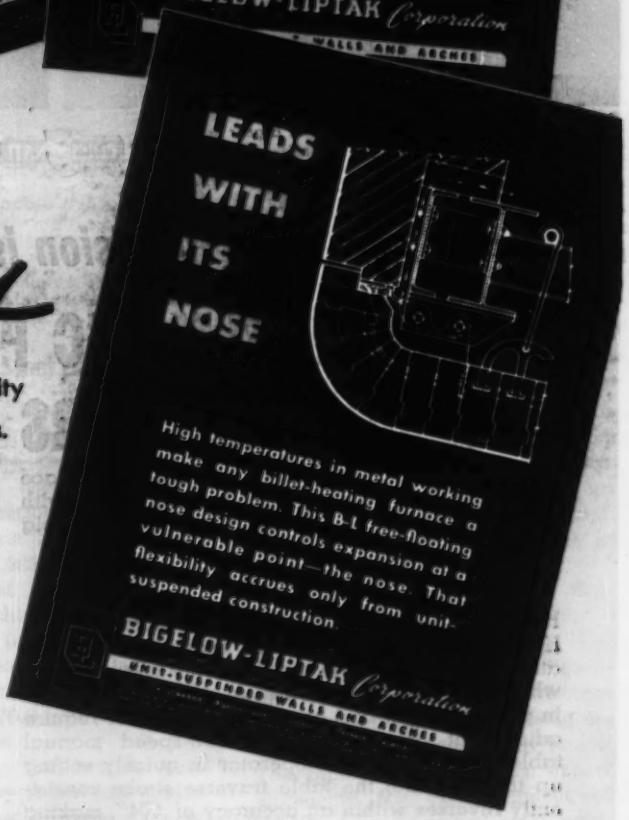
LEADS WITH ITS NOSE
High temperatures in metal working make any billet-heating furnace a tough problem. This B-L free-floating nose design controls expansion at a vulnerable point—the nose. That flexibility accrues only from unit-suspended construction.
BIGELOW-LIPTAK Corporation
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Versatility

You'll find that versatility is an inherent quality in B-L's design for furnace walls and arches. Thermal problems—erosion hazards—desired end results—are factors that govern the final design. That's why you see so many B-L installations through industry. After all, they provide long, dependable service at a low, low cost. More information? Write today.

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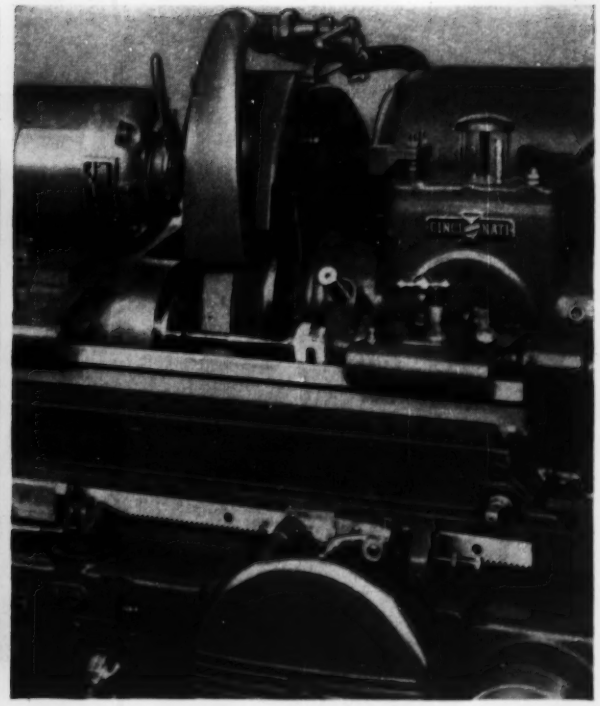
Grinding the sleeve diameter of a gear assembly. CINCINNATI FILMATIC 10" Plain Hydraulic Grinder.



Infeed grinding the bearing diameter of a cotton picker spindle, CINCINNATI FILMATIC 6" Plain Hydraulic Grinder.

Producing Low Cost Precision is a job for today's

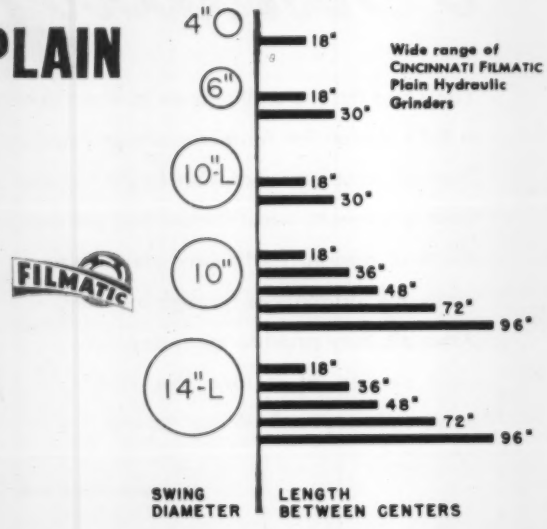
CINCINNATI FILMATIC PLAIN HYDRAULIC GRINDERS

According to a recent survey, you could replace many of your old centertype grinders now with new machines, and immediately gain two big advantages:

1) Higher production at a lower cost
2) Closer accuracy

Here's the way in which CINCINNATI FILMATIC Plain Hydraulics, the 10" size for example, help you attain these desirable results: FILMATIC grinding wheel spindle bearings are an outstanding factor in producing low-cost precision, they never require adjustment or maintenance; two-speed manual table traverse aids the operator in quickly setting up the machine; the table traverse stroke consistently reverses within an accuracy of .004", making it safe to traverse grind close to shoulders. Infeed jobs can be handled with a minimum of operator attention through the Automatic Infeed Equipment. More information about these producers of low-cost precision will be found in Sweet's Machine Tool Catalog, and complete data may be obtained by writing for catalog No. G-603.

CINCINNATI GRINDERS INCORPORATED
Subsidiary of The Cincinnati Milling Machine Co.
CINCINNATI 9, OHIO



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Weir Opposes Loan to Brazil

Chairman of National Steel Corp. speaks against U. S. government backing for additional foreign steel capacity. U. S. operating rate cited

ERNEST T. WEIR, chairman of National Steel Corp., Pittsburgh, has spoken out against the talked-about $40-million loan from the Export-Import Bank to Brazil to increase that country's steelmaking capacity.

"Before building up foreign steel plants, we should consider our own economic situation," said Mr. Weir. "If they (foreign countries) can secure private capital, at home or abroad, they are privileged to do so, of course, but for our government to provide money for further development, under present conditions, in my opinion, would not be justified and would be detrimental to the best interests of this country."

Contemplated—The proposed expansion by the Brazilian National Steel Co. at its Volta Redonda plant, for which the $40 million may be asked, would hike capacity of Brazil from 780,000 tons annually to about 1.2 million tons annually.

Part of the conditions which Mr. Weir believes should be considered in making foreign loans to expand steelmaking capacity which would compete with domestic capacity is the large expansion of the U. S. steel industry and the low operating rates for the U. S. steel industry in 1954. Mr. Weir sees no evidence that September operating rates will be anywhere near the "normal" of 85 per cent. Rather, it's probable, he said, that fourth-quarter operating rates will not average much more than 70 per cent, somewhat below even recent expectations.

Killing the Goose—"We have always exported steel to Brazil and to various other countries within South America and abroad, and this export business is very valuable to us," continued Mr. Weir. "There is a surplus of steel the world over so that there is no real justification for the U. S. government to lend money to Brazil or any other country to increase its steel capacity when we have ample steel available in this country."

NEA

ERNEST T. WEIR

"I strongly oppose this loan . . ."

Behind U. K. Steel Output

Look behind the very good steel output record in England this year and you'll find the British auto industry has been a mainstay. British production of cars was 379,480 for first half, 1954; a new record and 97,983 units more than first half, last year. Truck and commercial vehicle production was 128,186 units for first half, 1954; 8911 units more than last year. Exports of cars numbered 187,939, valued at $170.8 million for the first half, 1954.

Outlook for the British automobile industry is for full production for the rest of 1954.

Not all segments of British metalworking are prospering equally, however. Small foundries are finding it difficult to keep running regularly. Higher labor costs, fuel increases and motor transport cost hikes caused foundrymen to recently raise prices which, added to already existing consumer resistance to high prices, hit hard at already weak foundry order books.

GATT Revisions Asked

The State department will hold hearings on suggested revisions to the General Agreement on Tariffs and Trade in Washington, Sept. 13 through Sept. 17. This is in accordance with a commitment made by the President that the U. S. will "suggest to other contracting parties revisions of the substantive provisions of the agreement to provide a simpler, stronger instrument . . ." at a meeting in Geneva, Switzerland, in November, 1954.

Among the subjects which are virtually certain to be discussed in Geneva are the organizational provisions of GATT, special treatment for underdeveloped countries, agricultural quotas and export subsidies, import restrictions for balance-of-payments reasons, and provisions relating to duration of tariff concessions. Some of these subjects are close to the hearts of U. S. metalworking exporters and importers.

Persons wishing to make suggestions or offer views on revisions to GATT should write (in five copies) to: The Chairman, U. S. Delegation to the Ninth Session of the GATT, U. S. Department of State, Washington 25. Oral hearings will be held for applicants who receive appointments from the above indicated gentleman. Applications to make oral suggestions should be made no later than Sept. 3; written suggestions should be made no later than Sept. 13.

ECSC Patterns Take Shape

The European Coal & Steel Community has been in existence long enough now for some of its internal patterns to take shape. The table below compares export shipments for each segment of ECSC on semifinished steel product exports and manufactured steel product exports. Shipments are expressed as a percentage of total ECSC shipments.

	Semifinished Steel Exports	Manufactured Goods Exports
Germany	24.5%	55.0%
Belgium-Luxembourg	33.5%	11.0%
France-Saar	35.0%	28.0%
Italy-Netherlands	7.0%	6.0%

Inventors! What's the Idea?

ATTENTION, inventors! Uncle Sam again seeks your help in solving national defense problems. This year's list, obtainable free from the National Inventors Council, Department of Commerce, and prepared by the National Inventors Council in conjunction with the armed services, presents some 200 technical problems confronting the armed services. Lawrence Langner, secretary of the council, calls for solutions or ideas that might lead to solutions. All such proposals will be examined and evaluated and those that show promise will be referred to appropriate military groups for further study.

Needs of special interest to the metals industries are:

A new or improved carburetor that will not ice for 375, 500 and 800-horsepower gasoline engines.

Air inlet and exhaust grills which will protect combat vehicle openings from small arms fire and shell fragments.

Device to prevent collection of snow and ice between sprocket and track on track-laying vehicles.

Long-life packing for high-pressure oxygen compressors, also a lubricant which is compatible with the oxygen system and not subject to the temperature restrictions on the use of water as a lubricant.

Lightweight, high-strength oxygen storage cylinders that will not shatter from gunfire and that are corrosion resistant.

High-volume, high-pressure, lightweight air compressor for use in driving generators and applicable instruments and accessories on aircraft.

Mechanical device for rapid emplacement of barbed wire entanglements or similar battlefield obstacles.

Method for decreasing specific fuel consumption of gas turbine engines.

Better structures and mechanisms for reducing or absorbing high-frequency vibrations and shocks.

Rugged, compact, high-power, gas-driven servo capable of operating in a severe environment.

Dirt-immune hydraulic valves.

Jam-proof, ice-proof, dust-proof, quick disconnect, multicontact, umbilical plugs.

Batteries with long "shelf" life and constant power output over a wide temperature range.

Efficient, compact, light, quiet power source for mobile and man-portable field applications to obviate necessity of charging of batteries and the heavy logistic support required with throw-aways.

Semiconductor material for transistors, color to indicate its conductivity type.

Metal-to-metal adhesive with shear strength up to 500 degrees F of at least 2500 psi.

Better protective coatings for magnesium which will stand up in dissimilar metal contact areas.

Arresting hooks and hook points which will withstand the impact loading and high energy encountered in off-center landings.

Rugged, portable lightweight ammeter with sensitivity 20 to 100 times that of the conventional D'Arsonval type.

Simple, inexpensive, small carbon monoxide indicator.

Portable device for measurement of prestresses in bolt and nut assemblies.

Ideas: Don't Let Them Get Away

NEW IDEAS, although sometimes unpatentable, can be protected by the laws of contract. Thus, the "idea man" is safeguarded from infringement upon his intellectual property.

Many times innovations such as business plans, systems, advertising campaigns, improvement in a design already patented and ideas for improving various compositions do not fall under patent or copyright laws. And yet putting the change into effect may make a superior product and enhance the salability of that product.

Courts No Help—How then can the idea man protect his salable idea if patent or copyright laws do not apply? Common law and subsequent courts have held that a man has title to his originations, but unless protectable by established law those ideas become public property as soon as divulged.

The answer, says Small Business Administration, lies in a contract —a written agreement between

Universal landing gear for water, snow or land.

High-resistance insulating material for use in radiation detection instruments.

Low-cost, easily applied coil impregnant to meet all climatic conditions.

Reinforced plastic carrying case that will resist corrosive action of battery acid.

Cleaning process to remove deposits from turbine blades without disassembly of engine.

Device for nondestructive testing of adhesion in bonded joints.

Prevention of fungi and corrosion on all types of material, particularly electrical equipment.

An alloy or treatment to eliminate existing difficulties due to tendency of steel and aluminum to fracture easily at minus 25 degrees F or below, especially when low temperature is accompanied by high wind.

Ultra lightweight collapsible field antenna masts or vertical radiators.

Amphibious vehicle track to give maximum propulsive value in water.

Universal track for use on all types of terrain; present steel tracks destroy paved roads.

An easily worked alloy which will withstand temperatures above 5000 degrees F.

Noncorrosive or corrosive-resistant ball, roller and needle bearings.

Antifriction bushings of low-friction materials.

A continuously variable gear ratio in a single gear and pinion, possibly like the friction plate and pinion but positive in drive.

Substitute for the present wheel brake system which will not be damaged to an unacceptable degree by grease, sand, heat and water; possibly a sealed unit on the order of a bicycle coaster brake—or a sealed hydraulic type utilizing the principle of restricted flow.

Fastening device to function as a bolt or cap screw without the usual amount of turning.

Means of sealing cracks in cast iron that will avoid high heat and expansion associated with welding.

Air brake system requiring one hose.

Light alloys, aluminum or magnesium alloy that can be cast to shape and heat treated.

Improved electrolytes for plating to increase the rate of deposit and improve the plate deposited.

Some means of improving the hit-hard properties of electrodeposited chromium.

A durable finish applied to the reflecting bearing surfaces of cannon exteriors.

A dry-friction recoil brake to meet variations encountered in recoil mechanisms.

A noncorroding, penetrating alloying treatment of magnesium.

Protective metallic coatings for magnesium.

An easily applied compound that will remain on metal through temperature range of minus 80 to plus 200 degrees F and will prevent all corrosion.

Automatic gasoline nozzle.

An adequate test method to evaluate toughness characteristics of whole welded plate joints.

Test method to measure adhesion of organic coatings to metals and wood.

Quick, accurate, reproducible laboratory method of evaluating rust preventive oils and compounds in terms of total service life.

Lightweight, expendable pallet of nonmetallic waterproof construction to be handled by fork trucks.

Extremely small high-voltage power source.

A substitute for the carbide method of generating acetylene.

Means of quickly assembling parts of knockdown steel tanks so they are gasoline-tight.

High-strength, lightweight coupling for gasoline pipelines.

Extra lightweight, low-ground pressure, gasoline-operated, over-snow vehicle.

Machinery for fabricating and welding titanium and titanium alloys.

Device capable of burrowing vehicle-sized holes or tunnels in compacted snow or ice.

Personal heating system for distributing heat over the human body at subzero temperatures.

Industrial adhesive tape—inexpensive and composed of nonstrategic and noncritical materials and applied without heat in all temperatures.

Radical methods for rapid discharge of military supplies from ships off the beach or at dockside.

the prospective buyer and the originator.

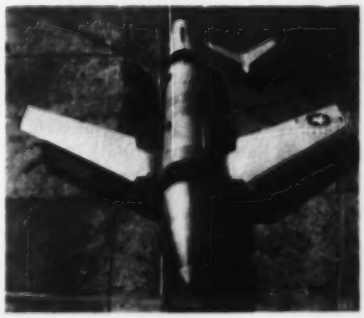
Protection Plus — The inventor should submit an agreement to the buyer of his idea in which the businessman is bound not to divulge any features of the plan not already known to others or to make use of the idea without proper compensation to the inventor. Likewise, the businessman should be protected against unwarranted claims by the inventor.

Such an agreement, when signed by both contracting parties, under law constitutes a "meeting of the minds." Once this has been accomplished, the idea man can submit his plan in detail to the businessman secure in the knowledge that he is fully protected by the law of contract, says SBA.

Thus, an idea man who creates something worthwhile, even though no copyright or patent is available, may be able to cash in on his innovation. Businessmen, too, under the contractual relationship, can protect themselves against suits for misappropriation of new ideas.

Pay-off Idea

Glenn L. Martin Co., Baltimore, crates components of Martin Matador, a guided missile, eliminating final assembly from the manufacturing program. Assembly is done at time of use



for transportation equipment

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FLAT-ROLLED STEEL—

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The kids who roll down Oak Hill in a coaster wagon, and those of us who ride in the world's best automobiles, put a lot of faith in flat-rolled steel.

If you use flat-rolled steel in your products, rely on a specialist—Great Lakes Steel. Our entire organization is devoted to the business of making more and better flat-rolled steel for every application. Many manufacturers have found we have some unique qualifications to help them to improve products and reduce costs. We would like the opportunity to work with you on your problems.

Call on our 25 years of specialization in flat-rolled products. Our representative will be glad to discuss your particular needs at your request.

Great Lakes Steel

Ecorse, Detroit 29, Michigan

PRODUCER OF N-A-X HIGH-TENSILE STEEL

UNIT OF NATIONAL STEEL CORPORATION

SALES OFFICES IN CHICAGO, CLEVELAND, GRAND RAPIDS, INDIANAPOLIS, LANSING, NEW YORK AND PHILADELPHIA

The 1955 Models: Record Changes In Bid for a Record Sales Year

WITH 1955 MODELS bringing more major changes than any year in the history of the industry, newsmen have found advance model information a burden of integrity rather than the customary reportorial challenge.

This year new model forecasting is about as exciting as shooting sitting ducks, and the advance blowing off of a few tail feathers undoubtedly has had an adverse effect on struggling auto sales.

Top Secret—Although this impact on sales can never be measured, an indication of its impact on the auto companies has been the sharp stiffening of security around engineering and styling departments.

Needless to say, this year the cat is pretty well out of the bag. Tool and die men have had one of their best years on auto work and special equipment makers have been up to their spindles in new automated units.

Sales Pushers—This year the new models ought to do the job salesmen haven't been doing during the last year. Witness Buick and Olds which have wrapped-around their way to third and fifth place in the industry at top production paces nearly all year. These makes, with Cadillac, were the only ones to offer completely new bodies in 1954.

Next year new bodies will be offered by Ford, Mercury, Chevrolet, Pontiac, Plymouth, Dodge, DeSoto, Chrysler, Packard and Hudson.

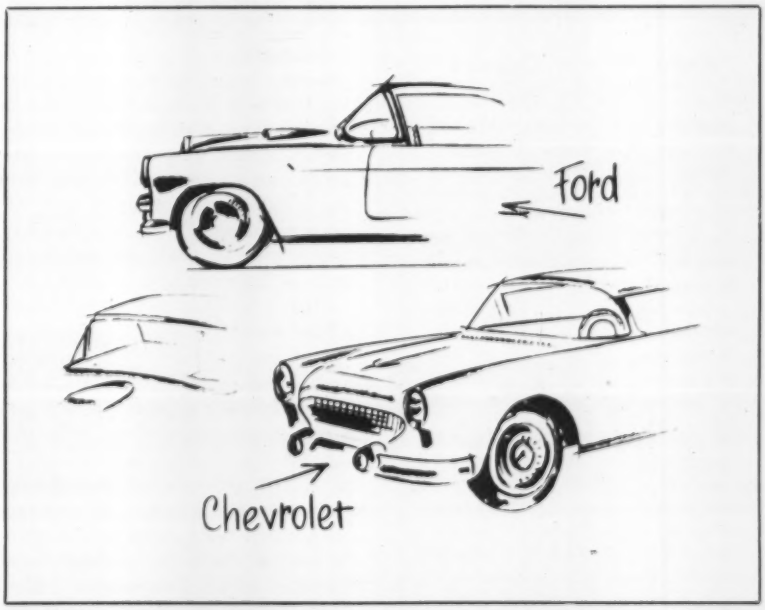
Engine Appeal—Then there's the matter of engines. Among 1954 cars, only Ford and Mercury had new V-8 engines to offer. This year new V-8's will be offered by Plymouth, Chevrolet, Pontiac, Packard and Nash which will purchase the smaller Packard engine. That leaves only Hudson, Willys and Kaiser outside the V-8 circle. Once again, there's plenty of sales dynamite as witness the Ford move to first place largely on the appeal of engine and other mechanical changes.

In the transmission department there will be changes coming, too. Hydra-Matic will be substantially changed in 1955 to provide greater smoothness, while Dynaflow and Powerglide will be modified to give still better performance. Packard will introduce its new transmission with the V-8 engine while Ford, Mercury and Lincoln will go to a revised transmission improved in the performance direction. The pattern appears to favor a torque-converter coupled with a planetary upshift of one or two stages, a combination of performance and smoothness closest approaching the "ideal-o-matic" of engineers' dreams.

The Option—Tubeless tires will be offered on virtually all makes next year moving quickly to standard equipment. Power options will continue their inroads moving to standard equipment status on some deluxe middle-priced makes. Color options will be even more gaudy and extensive than please-all 1954 with interior treatments moving to such gayety they will probably start a move in the other direction.

Engines will move up about 20 horsepower right across the board. Tops in the field will be the new Packard with its 260 hp OHV V-8. Chrysler will probably be second with about 255 hp gained through an increase in compression ratio since the induction was modified last year. Others will trail the field

From the "dream cars" comes an indication of 1955 styling



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with Chevrolet bowing in at about 160 hp and Plymouth at about 145 hp. To sum it up, if you're a man who likes horsepower, you won't be in the running with a 1954 machine.

Control Changes — Watch the driving controls to be changed this year. One firm may well introduce a combination throttle-brake pedal while another is reported taking the shift lever off the steering wheel. To replace it could be a series of push buttons on the dash properly labeled operating solenoids which do the shifting. If you were a Terraplane-Hudson fan about 1937, you'll be pleased to know the shift lever is on its way out. Steering wheel diameters will probably be diminished as power steering reduces the need for leverage, and black-lighted instrument panels are reported in the works.

So, automakers are pulling out all the stops in 1955 and as a consequence, you can look for the year to be a near-record one in auto production.

Here's why:

Ford and **Mercury** will share a new body shell with a wrap-around windshield. Ford horsepower will be about 160 with Mercury at about 180. Both will have a new transmission that will improve the dig more than the horsepower figures indicate. Styling will be on the Thunderbird theme which is made from Ford dies.

Sleeper in the Ford family is the **Lincoln.** According to the best information available, this car will not have a wrap-around windshield as introduced in 1955. The headlights will be frenched with pointed bezels with the line running back into the fender, and the rear-quarter panels will sweep back in true fins of the dorsal variety. But the body shell usually shared with Ford and Mercury will not be changed until June of next year.

At that time an entirely new line of cars is expected to make its entry into the Ford lineup. Priced midway between the Mercury and Lincoln, the cars will share a second body shell with the latter which will have a wrap-around windshield. This line of cars, reportedly to be called the **Fairlane,** does much to explain facilities expansion Ford has been dabbling in during recent years.

Plymouth will use the Dodge truck V-8 engine just announced, probably at the same horsepower of 145. Styling will include a wrap-around windshield that is really wrapped rather than tucked back at the corners. This leaves the A-post at about the same angle with the vent window retaining its familiar shape and relationship to the windshield. **Dodge** will use the same body shell, show a horsepower increase to about 170 and like the Plymouth show a more sculptured look.

DeSoto and **Chrysler** will share a second body shell incorporating a different type of wrap-around windshield. In this unit somewhat similar in outline to the GM unit, the vent windows are actually part of the wrap-around. A thin chrome strip serves to seal the vent windows at the windshield joint, appearing somewhat like an extremely thin A-post.

Most unusual of the Chrysler cars promises to be the **Imperial** line. This unit reportedly will be built from plastic dies and will embody styling heavily reminiscent of the K-310 and other Ghia special cars. Notable absence of chrome and natural body accents will give the car a distinctly foreign and expensive look. This marks a distinct departure from previous practice in which the cars were deluxed Chryslers.

Chevrolet will go wrap-around with Cadillac bezels and a miniature Cadillac-type body, 160 hp as mentioned above. **Pontiac,** sharing the same shell, will have a more dramatic rear fender and grille treatment. Accented in the rear will be the centered tail light motif giving a jet-like appearance with a triangular fin on top. Horsepower should be 170ish.

Olds, Buick and **Cadillac** will be identification changes this year with the wad having been shot last year. **Nash,** ditto, with **Hudson** moving into the Nash body and retaining only its own engine and certain trim identification. The **Hudson Jet** will be dropped as will the **Henry J.** Still vague are **Kaiser** plans for 1955 leading to speculation that the firm will drop out of the game in the next year. First-half registrations showed only about 15,000 units compared with about 50,000 for the mark a year ago. **Studebaker** will introduce reworked cars again but will reintroduce its **President** line with the smaller **Packard** engine to stay in the horsepower derby.

The year ahead should be a good one for the auto industry on the strength of its products. And when the auto industry goes, so does the economy. You ought to know; you'll probably be buying a new car in 1955.

Auto, Truck Output

U. S. and Canada

	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April	676,233	782,491
May	621,249	684,843
June	623,732	713,778
July	543,797†	756,592
August		641,152
September		605,228
October		651,153
November		457,852
December		529,588
Total		7,816,843
Week Ended	1954	1953
July 24	129,582	172,874
July 31	130,917	168,267
Aug. 7	124,168	137,671
Aug. 14	119,208	156,526
Aug. 21	121,408	163,635
Aug. 28	105,000*	152,866

Source: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.

Inventories on the Rise

In the auto industry the rose of falling dealer inventories is beginning to fade; stocks are rising slightly. There is some talk that many dealers won't be any better off inventorywise this year than they were at new model time a year ago.

On the other hand, August sales are holding at about July levels of 450,000 monthly, according to *Ward's Automotive Reports.* With longer than usual shutdowns for changeover in prospect and with 1954 production runs just about over, the situation isn't quite as bad as it's pictured by some. Probable outcome is this: Dealers who get out and sell will be in good shape; those who sit back will still be sitting in 1954 models watching the 1955s roll by.

Do YOU have a metallurgical or fabrication problem involving stainless steel?

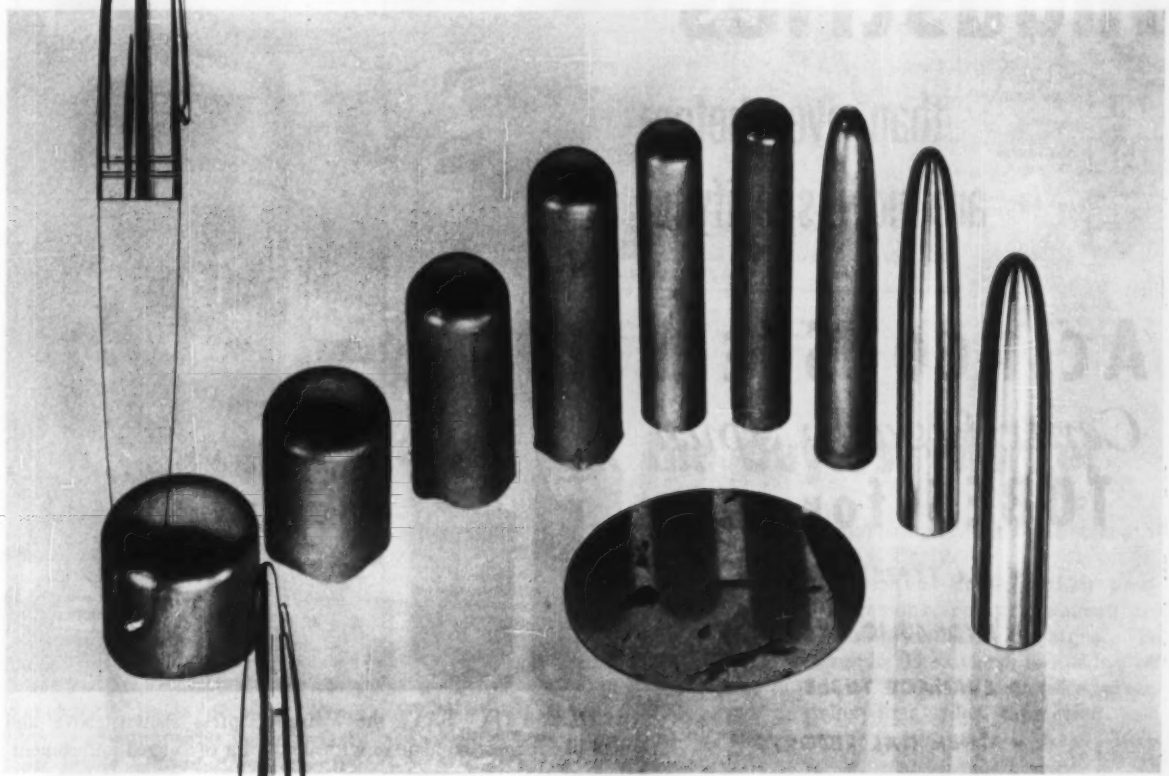

Illustration shows progressive steps in drawing process from stainless steel blank to finished cap.

Here's one of many we have helped solve.

THE PROBLEM: How to utilize the advantages of stainless steel in mass-producing fountain pen and pencil caps and overcome manufacturing difficulties without sacrificing the modern design of these products.

THE SOLUTION: After a complete study of this customer's requirements, the metallurgical department of Chicago Steel Service was able to recommend the proper type, gauge and temper of stainless steel for this purpose and, equally important, to suggest techniques for processing this material using routine drawing methods.

Once a problem like this is solved, it is no problem for the House of Stainless to supply the material when needed, from our complete warehouse stocks or through mill shipments.

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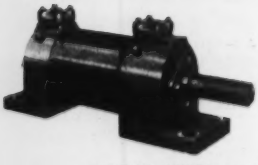
Sales Representative at Bloomington and Rockford, Illinois; Indianapolis and South Bend, Indiana; Cedar Rapids and Bettendorf, Iowa; Grand Rapids, Michigan; Fond du Lac, Wisconsin.

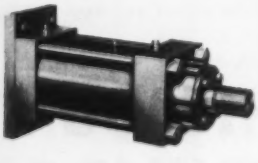
More *modern* Industries

than ever before are now specifying

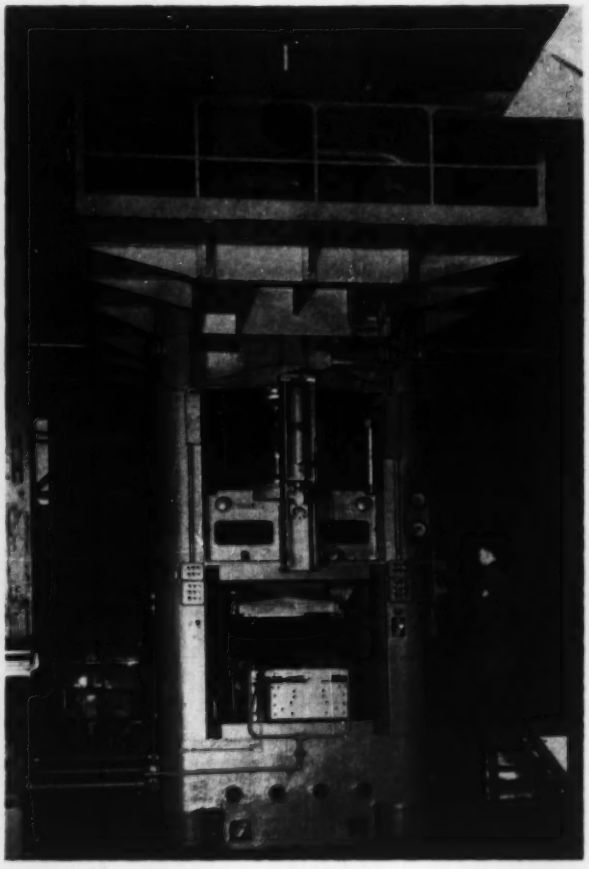
ACIPCO STEEL *Centrifugally Spun* TUBES for . . .

- *ALL TYPES OF ROLLS*
- *HYDRAULIC CYLINDERS*
- *FURNACE TUBES*
- *CHEMICAL RETORTS*
- *MANY OTHER INDUSTRIAL APPLICATIONS*





ACIPCO STEEL centrifugally spun tubes were employed in the construction of the 3000 psi (above) and 2000 psi (below) hydraulic cylinders.



NEEDLESS TO SAY, the hydraulic press shown above and others like it must be built to withstand a lot of rugged punishment. Many of these industrial giants employ various types of hydraulic cylinders constructed of ACIPCO STEEL centrifugally spun tubes for shuttle feed use and the like.

ACIPCO STEEL tubes are serving in countless industrial uses and their exceptional value as a component in weldment applications is widely recognized. Tubes can be furnished in all the alloy grades including heat and corrosion resistant stainless steels as well as plain carbon grades. Special non-standard analyses are also available. ACIPCO tubes are manufactured in lengths up to 16 feet with wall thicknesses from .25" to 4". Outside diameters range from 2.25" to 50" and in large sizes ACIPCO tubes have a decided economical advantage over hollow-bored forgings.

In ACIPCO tubes there is an absence of directional lines of weakness found in hot rolled or cold drawn tubing. Tubes can be furnished rough as-cast, finished machined or honed to your specific need.

AMERICAN CAST IRON PIPE COMPANY

Special Products Division
Birmingham 2, Alabama

Distributors:

Austin-Hastings Company, Inc.
226 Binney Street
Cambridge 42, Massachusetts

Peter A. Frasse and Co., Inc.
17 Grand Street
New York 13, New York

Strong, Carlisle and Hammond Co.
1392 West Third Street
Cleveland 13, Ohio

Lyman Tube and Bearings, Ltd.
920 Ste. Sophie Lane
Montreal 3, Canada

J. M. Tull Metal and Supply Co.
285 Marietta Street, N. W.
Atlanta, Georgia

Ducommun Metals and Supply Co.
4890 South Alameda Street
Los Angeles 54, California

C. A. Roberts Company
20 South Aberdeen Street
Chicago 7, Illinois

T. E. Rybka
South Park Road—R. D. 4
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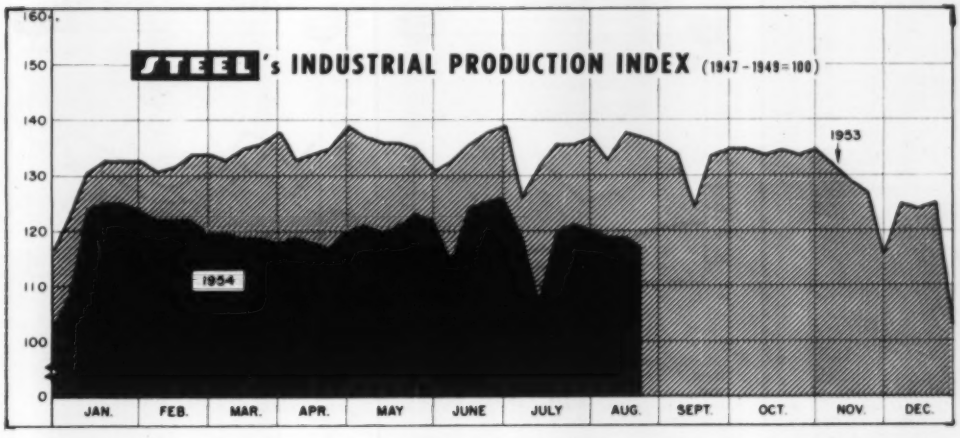
NOW AVAILABLE without charge. "ACIPCO STEEL Centrifugally Spun Steel Tubes"—a new 16mm sound motion picture in color (33½ minutes) showing ACIPCO's centrifugal tube-making process. Write ACIPCO, P. O. Box 2603, Birmingham 2, Alabama.



LATEST WEEK*	117
PREVIOUS WEEK	119
MONTH AGO	121
YEAR AGO	137

* Week ended Aug. 21.

Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 11%.

Appliance Makers Crack the Buyers' Market

APPLIANCE manufacturers have proved an important point: You can sell—and sell well—in a buyers' market.

Along with most durable goods, appliances took a tumble late last year, but they have made a strong comeback. Sales of most items have been running at close to last-year levels. Production, reflecting inventory paring, has been off somewhat, but less than 10 per cent in most lines. The performance in appliances is one reason why business is doing as well as it is. STEEL's industrial production index is currently at a respectable, although admittedly unsensational, 117 per cent of the 1947-1949 average.

In the Wash—Home laundry appliances show pretty much what has happened—a slow start, then a pickup. And the industry expects to do even better in second half—as much as 50 per cent better, some producers predict.

Sales of standard-size washers in June (latest figures available) were 303,455, only .2 per cent under a year ago. Total first-half sales were off 9.1 per cent because of the slow start. Increases in second half will bring totals for the year closer to that of 1953.

Dryers Better—Sales of automatic dryers were even better percentagewise. First-half mark of 293,970 was up 11.9 per cent from a year ago pointing to the growing popularity of this relative newcomer in the field.

Ironers had a bad first half, sales being less than half of those registered in the like 1953 period. This looks like the runt of the appliance litter, but some strengthening is likely.

No Letup—To keep their products moving, many producers are planning big fall campaigns. For example, Thor Corp. is kicking off one of the most extensive advertising and sales promotion programs in its recent history. More

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,496	1,474	2,106
Electric Power Distributed (million kwhr)	8,850[1]	8,996	8,432
Bitum. Coal Output (daily av.—1000 tons)	1,293	1,233	1,589
Petroleum Production (daily av.—1000 bbl)	6,140[1]	6,158	6,619
Construction Volume (ENR—millions)	$258.9	$419.2	$311.3
Automobile, Truck Output (Ward's—units)	121,408	119,208	163,635
TRADE			
Freight Car Loadings (unit—1000 cars)	687[1]	685	817
Business Failures (Dun & Bradstreet, no.)	220[1]	233	122
Currency in Circulation (millions)[4]	$29,866	$29,911	$30,143
Dept. Store Sales (changes from year ago)[3]	+1%	0%	0%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$19,026	$18,032	$17,359
Federal Gross Debt (billions)	$274.7	$274.7	$272.7
Bond Volume, NYSE (millions)	$16.8	$17.7	$10.2
Stocks Sales, NYSE (thousands of shares)	12,473	13,805	5,043
Loans and Investments (billions)[4]	$83.3	$83.5	$79.8
U. S. Gov't. Obligations Held (billions)[4]	$36.4	$36.6	$32.3
PRICES			
STEEL's Finished Steel Price Index[5]	194.19	194.19	189.38
STEEL's Nonferrous Metal Price Index[6]	215.1	215.1	207.8
All Commodities[7]	110.3	110.2	110.8
Commodities Other Than Farm & Foods[7]	114.3	114.3	114.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1954, 2,384,549. 1953, 2,254,459. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
CHATTANOOGA 2, TENN.

they all know the best place in Cleveland

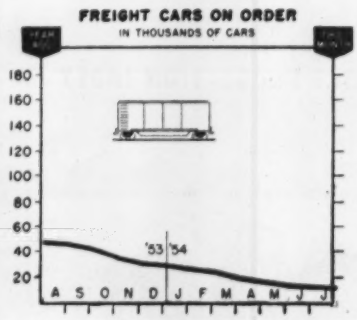
"Hotel Cleveland, sir?"
Whether you arrive by train, plane or car, the friendliest place to stay is Hotel Cleveland, directly connected with Union Terminal.

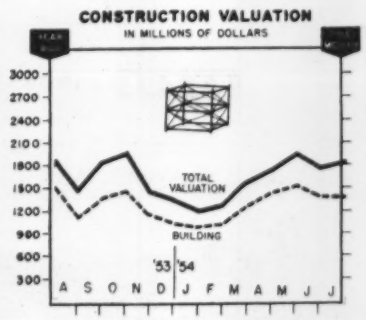
No room charge for children under 14 when registered with an adult.

Hotel Cleveland

SONNABEND OPERATED HOTELS
Distinguished American Landmarks
CHICAGO: Edgewater Beach Hotel
BOSTON: Hotel Somerset
NEW YORK CITY: Ritz Tower Hotel
CLEVELAND: Hotel Cleveland

THE BUSINESS TREND





	Awards		Backlogs (end of month)	
	1954	1953	1954	1953
Jan.	2,942	7,406	27,959	77,414
Feb.	2,057	2,284	25,441	71,882
Mar.	348	3,247	20,966	68,553
Apr.	909	2,102	17,817	62,637
May	1,071	1,645	15,615	57,345
June	1,139	1,453	13,860	52,315
July	883	1,671	12,889	47,423
Aug.	....	3,913	.....	45,735
Sept.	....	3,867	.....	42,198
Oct.	....	1,705	.....	35,171
Nov.	....	2,858	.....	31,869
Dec.	....	2,159	.....	29,950
Total	....	34,310		

American Railway Car Institute.

	37 States			
	Total		Building	
	1954	1953	1954	1953
Jan.	1,151.9	1,075.9	935.6	876.0
Feb.	1,221.3	1,021.3	977.5	792.9
Mar.	1,527.5	1,374.5	1,199.8	1,054.4
Apr.	1,691.9	1,741.5	1,401.6	1,354.2
May	1,925.3	1,606.1	1,497.6	1,219.8
June	1,733.3	1,115.5	1,376.7	922.3
July	1,836.9	1,793.3	1,386.9	1,417.8
Aug.	.....	1,414.4	.....	1,053.4
Sept.	.....	1,741.7	.....	1,290.7
Oct.	.....	1,892.4	.....	1,392.7
Nov.	.....	1,394.1	.....	1,096.0
Dec.	.....	1,279.8	.....	973.8
Total	.....	17,423.5	.....	13,455.0

F. W. Dodge Corp.

Charts Copyright 1954 STEEL.

than a half-million dollars is earmarked for the battle. And the company is doubling production to meet orders received by sales executives who introduced Thor's three new home appliances to dealers and distributors.

Perhaps one of the brightest spots on the whole appliance scene is refrigerators. Here is a product going into what most observers agree is an almost saturated market. And yet sales are only a little below 1953 and are generally above 1952.

New Challenge—Developing the replacement market in appliances is the coming challenge for producers; refrigerator sales show it can be done. In fact, it may be even easier than marketing a new appliance because the customer is already sold on the value. Maybe a refresher course in Detroit would start things moving.

Air conditioning, the bouncing baby of the industry, almost began to run before it learned to walk. But it didn't, with the result that a number of companies got kicked in the face. Well-known brand names had a good year. (Admiral, for example, tripled its last-year production.)

But newcomers with names less well known to consumers only had big inventories to show for their pains. The lack of a prolonged nationwide hot spell made the difference. Those who are still around next year should do better, but "once burned, twice shy" will take its toll.

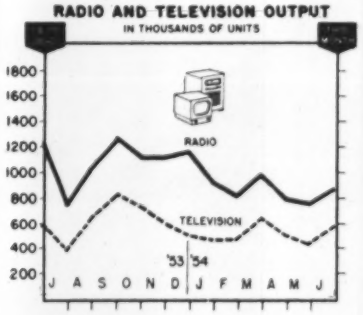
TV in Black and White . . .

In spite of voicings of big-screen color TV, black and white sets are still moving at a comfortable pace. Price is the big reason with most consumers figuring they'll get lots of use out of black and white before color comes down to the price they want to pay.

Retail sales in first half, 1954, were over 2.8 million sets. Production, again because of the inventory situation, was lower, 2.7 million sets compared to over 3 million in the like 1953 period. With stocks more in balance, production will start to rise moderately.

Among other appliances, vacuum cleaners held up well; June sales were only .9 per cent under a year ago. Ranges have been picking up steadily. Water heaters are coming out of their usual seasonal dip.

RADIO AND TELEVISION OUTPUT
IN THOUSANDS OF UNITS

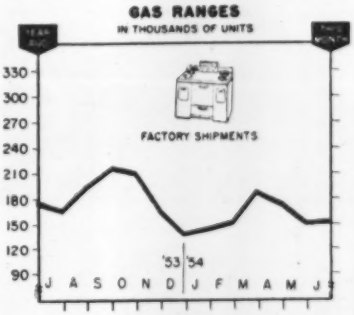


Thousands of Units

	Radio		Television	
	1954	1953	1954	1953
Jan.	872	1,093	421	719
Feb.	769	1,192	427	731
Mar.	940	1,549	600	810
Apr.	745	1,159	458	568
May	722	1,109	396	482
June	838	1,164	544	524
July	...	874	...	316
Aug.	...	992	...	604
Sept.	...	1,217	...	770
Oct.	...	1,052	...	680
Nov.	...	1,066	...	560
Dec.	...	1,101	...	450
Total	...	13,368	...	7,214

Radio-Electronics-Television Mfrs. Assn.

GAS RANGES
IN THOUSANDS OF UNITS



Shipments—Units

	1954	1953	1952
Jan.	137,000	169,200	166,100
Feb.	152,900	185,900	166,200
Mar.	184,200	208,200	185,200
Apr.	172,400	220,300	182,300
May	149,600*	181,000	162,800
June	152,000*	166,600	175,700
July	...	159,000	154,200
Aug.	...	186,800	178,600
Sept.	...	209,500	199,600
Oct.	...	203,900	239,700
Nov.	...	158,500	186,400
Dec.	...	134,400	178,600
Total	...	2,183,300	2,175,400

Gas Appliance Mfrs. Assn.
*Preliminary.

Propping Up a Prop . . .

One of the reasons for the continuing strength of appliances is the continuing high level of housing construction. A Federal Reserve Board survey of 1953 appliance buying shows that large expenditures for household equipment were particularly frequent among people who had recently bought or built homes. And that trend has continued.

With nonfarm housing starts averaging about 100,000 a month this has been a good year for home builders—and for appliance makers.

Giants Shrink a Little . . .

The healthy appliance industry is good news to the nation's power companies. Air conditioning in particular helped push weekly consumption above the 9-billion-kilowatt-hour mark for three weeks in a row. Latest weekly figures show a drop to 8996 million kilowatt-hours, still within shooting range of the weekly record. But in all probability this year's peak is past, although increasing industrial production and shortening days will keep consumption high.

Another industry that has fallen from near-record levels is construction. Contract awards are still healthy, though, $259 million in the latest week reported by *Engineering News-Record*. This is a drop from the $419 million of the previous week, but it isn't likely to keep the month from being the second-best August in the books.

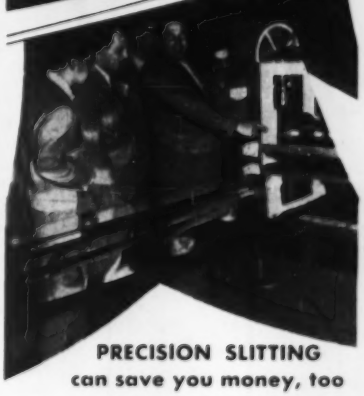
Recent declines were general with highways, state, municipal and private construction falling most sharply. Private industrial building and mass housing showed gains.

Trends Fore and Aft . . .

This has been a bad year so far for the nation's railroads. Car loadings, and consequently profits, were on a toboggan ride in first half. A half-hearted climb has been in progress since May and should continue—but slowly . . . American Supply & Machinery Manufacturers' Association Inc. reports new orders for July at 87.84 per cent of June. Federal Reserve Board industrial production index for the same period held steady at 124 . . . Retail sales across the nation, according to Dun & Bradstreet figures, are ranging from up 3 per cent to down 1 per cent from last year.

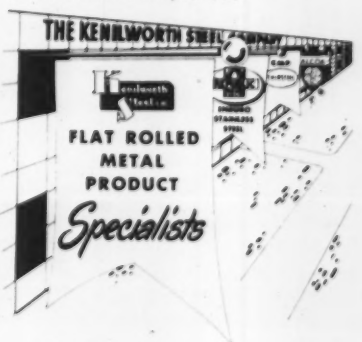
typical scene at the 1954 Kenilworth Klinic

Were you there? Here's a few of the crowd of thousands that visited us during the week long Klinic in May—viewing one of the Kenilworth Precision slitting operations, watching one of the many "ideas in action" of the annual exhibition



PRECISION SLITTING
can save you money, too

Expert tailoring of flat rolled metal products to your exact requirements is one of Kenilworth's services. Helps you eliminate waste, prepares your metal for maximum yield and assures you a precision product that can speed your production. And remember that Kenilworth offers this service for metal in your inventory that can be converted to your current production—frees working capital. Wouldn't it be a good time now to talk over with a Kenilworth representative your needs—aluminum coils or sheets, stainless sheets or coils, spring steel and the many items included in the complete Kenilworth line of flat rolled metal products.

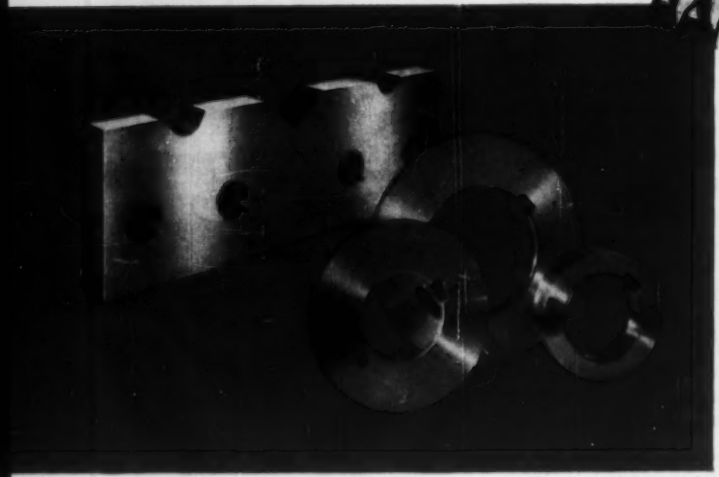


THE Kenilworth Steel co.

750 BOULEVARD, KENILWORTH, NEW JERSEY
SPECIALISTS IN FLAT ROLLED METAL PRODUCTS
Telephones: N. Y. COrtlandt 7-3427 • N. J. UNionville 3-6900

built for
rugged action

Heppenstall SHEAR KNIVES
***durable blades* for industry**



Many leading plants make Heppenstall their standard specification for shear knives. Heppenstall's record for durability provides such production advantages as:

- **MORE CUTS BETWEEN GRINDS**
- **MORE UNITS PER BLADE**
- **LOWER OVERALL BLADE COST**
- **INCREASES IN PRODUCTION**

The reasons may be found in Heppenstall's high standards for the development and manufacture of shear knives. Made from high quality, electric induction steels, these long-lasting knives are famous wherever hot and cold, ferrous and non-ferrous metals are cut and sheared.

Make Heppenstall *your* standard specifications.

Heppenstall

The most dependable name in forgings

PITTSBURGH 1, PENNSYLVANIA

Sales offices in principal cities

HERBERT A. GUMZ
. . . heads Crescent Industries

VIRGIL C. RICE
. . . Norge manufacturing director

ROBERT A. EMBREE
. . . Chandeysson Electric post

Herbert A. Gumz was elected president and chief executive officer of **Crescent Industries Inc.**, Chicago. He was associated with Webster-Chicago Corp. for 11 years, his last position being executive vice president.

Temco Aircraft Corp., Dallas, named **E. Fred Buehring** plant manager of its aircraft overhaul and modification center at Greenville, Tex., a position vacated Aug. 10 by **Herrol W. Bellomy** who, due to ill health, is on an extended vacation.

Alvin R. Reinarz was promoted to administrative engineer and **Richard N. Cordrey** to chief designer at the Toledo, O., plant of **National Supply Co.**

A. L. Woods was made assistant to the vice president of metal sales and procurement at **Calumet & Hecla Inc.**, Chicago. His new assignment is in addition to responsibilities as director of purchases of the firm's Wolverine Tube Division with which he has been associated since 1933.

Promotions at the Riverdale, Ill., plant of **Acme Steel Co.** include appointment of **Joseph H. Myers** as assistant general superintendent and **Herman H. Lentfer** as superintendent of the manufacturing and processing division.

Virgil C. Rice was made director of manufacturing at Borg-Warner Corp.'s **Norge Division**, Chicago. He returns to the company after an 11-year absence, having served as a Norge manufacturing executive from 1927 to 1943. He was vice president and director of manufacturing of Avco Mfg. Corp.'s Bendix Home Appliances Division and American Kitchens Division from 1943 to 1953 and vice president-manufacturing of Ronson Art Metal Works from 1953 to 1954. Mr. Rice replaces **Stewart S. Battles**, resigned.

C. M. Rhoten was named factory manager of the Herbrand Division, **Bingham - Herbrand Corp.**, Fremont, O. He joined the division a year ago after serving Ford Motor Co.'s tractor and implement division.

Alfred Sugar, until recently aluminum division plant manager for American Metal Co. Ltd., was appointed vice president and technical director of **Alloys & Chemicals Mfg. Co.**, Cleveland.

Great Lakes Steel Corp., Detroit, appointed **R. B. Allard** manager of its primary producing units and **William F. McGarrity** superintendent of steel production. They have been associated with Weirton Steel Co. Both companies are divisions of National Steel Corp.

Robert A. Embree was made process and plant engineer, motor-generator division, **Chandeysson Electric Co.**, St. Louis. Associated with Laclede-Christy Co. for 16 years, he has been serving as plant manager.

Carl R. Sare was elected president of **W. W. Sly Mfg. Co.**, Cleveland. He succeeds **Frank W. Klatt**, retired. Mr. Sare formerly served as vice president. He previously was associated with Patterson Foundry & Machine Co. and American Steel & Wire Division, U. S. Steel Corp.

William H. French was appointed director of purchases of **Trailmobile Inc.**, Cincinnati, to succeed **E. W. Barnekoff**, resigned. Mr. French formerly was purchasing agent for the Cincinnati plant.

T. Stanton Fremont was appointed to the newly created post of appliance sales manager for **Admiral Corp.**, Chicago. **Joseph P. Halpin** is sales manager, refrigerator division, replacing **Bert Schaefer** who is on extended leave of absence. Mr. Halpin continues direction of the contract division.

Robert J. Amis was named chief draftsman, engineering department, **Frederic B. Stevens Inc.**, Detroit. He fills the vacancy created by promotion of **John Zytell** to engineer metal finishing

WALLACE N. BARKER
. . . Fruehauf Trailer executive

R. H. ISBRANDT
. . . chief design engineer for Nash

CHARLES H. DAY
. . . heads Continental's Omaha plant

waste disposal equipment and installation.

Wallace N. Barker, former executive vice president of Pullman-Standard Car Mfg. Co. and associated with that firm for the last 34 years, joined **Fruehauf Trailer Co.,** Detroit, as vice president and assistant to the president.

George A. Bentley was made sales manager of the central division of **Townsend Co.** He has headquarters in Detroit where he previously served Detroit Stamping Co. as sales manager.

Carl W. Larrick was appointed works manager, **Morris Machine Tool Co.,** Cincinnati. He was formerly production control manager for the company.

I. Wendell Hamm joined **Carborundum Co.,** Niagara Falls, N. Y., as director of manufacturing.

Commercial Steel Casting Co., Marion, O., appointed **Harold W. Rider** as sales manager. He joined the company in 1936.

Bruce J. Briggs was appointed sales manager, tool division, **Barcalo Mfg. Co.,** Buffalo. He was formerly field sales manager.

Chester A. Sellen, chief metallurgist and assistant to the general manager at **Eaton Mfg. Co.'s** Reliance Division, Massillon, O., was made assistant general manager and chief metallurgist.

R. H. Isbrandt was made chief design engineer of **Nash Motors Division,** American Motors Corp., Detroit. He succeeds the late **J. F. Sladky.**

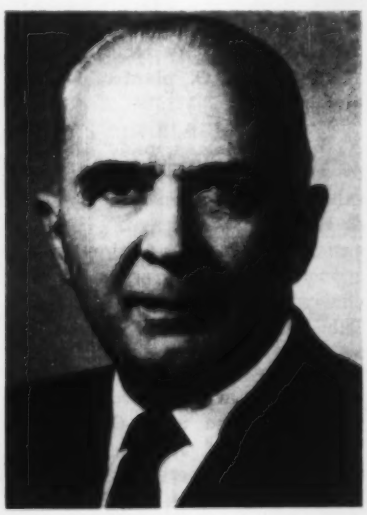
Vaughn Machinery Co., Cuyahoga Falls, O., elected **James A. Vaughn** president and general manager. Former vice president, he succeeds **L. A. Vaughn,** president since 1929, who becomes chairman of the board. **Gordon C. Vaughn** was elected vice president-manufacturing and **Eugene Daugherty** vice president-sales. **E. J. McIlvried** is now senior vice president and director of engineering.

Charles H. Day was made manager of **Continental Can Co.'s** new Omaha, Nebr., metal can plant. He was with Sherwin-Williams Co. in Chicago for 20 years, most recently serving as superintendent of its container division.

Robert J. Ely was named assistant chief metallurgist, **American Brake Shoe Co.,** New York. Formerly process metallurgist, Mr. Ely joined the company in 1945.

Alfred Sonntag, manager of Sonntag Scientific Corp., a division of Baldwin-Lima-Hamilton Corp., resigned that position to devote his time more exclusively to **Alpha**

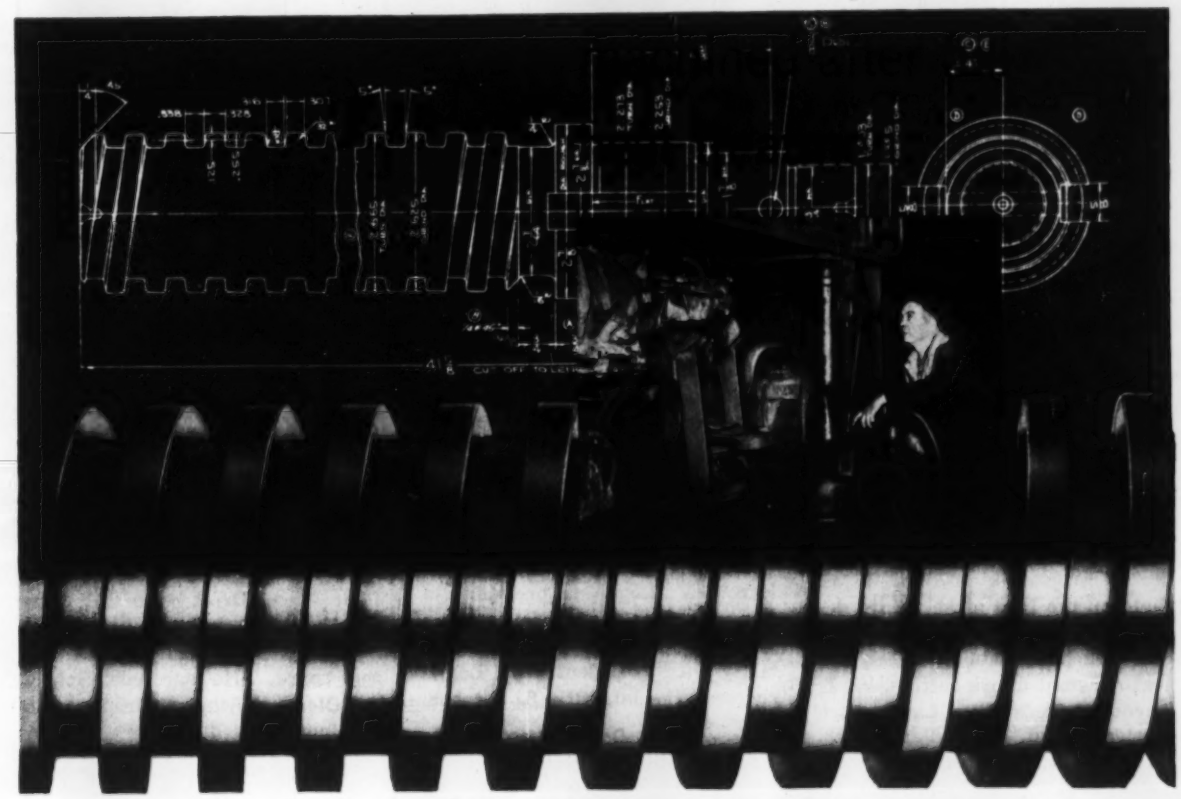
JAMES A. VAUGHN



L. A. VAUGHN

. . . president and chairman of Vaughn Machinery Co.

MAX-EL alloy steel part for 100-ton jack



The Max-el part shown above is the lifting screw from a Duff-Norton air motor screw jack. It's the part that actually lifts and holds the load . . . up to 100 tons.

To make the part, blanks are cut from Max-el 3½ bar stock. After heat treating to 321-341 Brinell, threads are chased and all machining performed. Max-el's optimum machinability after heat treatment, its high-strength, toughness, deep hardenability – which prevents thread sinkage, and high surface finish make it an ideal choice for this rugged application.

But try Max-el yourself. Its excellent machinability means longer tool life, more pieces per grind. And you'll appreciate its freedom from distortion and superior quality. For immediate delivery of Max-el call your nearest Crucible representative.

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Corp., Greenwich, Conn., of which he is president. He continues in an engineering consultant capacity for B-L-H.

Babcock & Wilcox Co. appointed **E. B. Severs** development engineer in its erection department at Barberton, O., and named **G. H. Weight** southwest district sales manager, tubular products division, in charge of sales offices in Houston and Tulsa, Okla.

Century Engineers Inc. appointed **S. W. Voorhes** manager of its Dayton, O., office.

Harry Walker was named vice president, **Norma-Hoffmann Bearings Corp.**, Stamford, Conn., in charge of the newly formed Walker division. He is former general sales manager of B. G. Corp.

International Nickel Co. Inc., New York, established four new sections in its development and research division. **H. V. Beasley** heads the constructional alloy steels section, **Clarence H. Sample** the electroplating section, **T. E. Kihlgren** the Inco nickel alloys development section and **Dr. V. N. Krivobok** the stainless steel and heat-resistant alloys section. **W. Z. Friend** succeeds **F. L. LaQue**, vice president and division manager, as head of the corrosion engineering section; **Dr. T. P. May** and **H. T. Paterson** were made technical manager and operational manager, respectively, of the Kure Beach corrosion testing station near Wilmington, N. C.; and **W. H. Sparr Jr.** succeeds Mr. Beasley as head of the technical field section in Pittsburgh.

W. T. Bosworth was made sales manager of rotary-hearth furnace and heat treating equipment for **Salem-Brosius Inc.**, Pittsburgh.

DAVID W. DAVENPORT
. . . S-P Mfg. sales manager

AUBREY H. MILNES
. . . Steel Improvement & Forge exec.

S-P Manufacturing Corp., Cleveland, appointed **David W. Davenport** sales manager. Formerly assistant sales manager, he takes over the sales manager's duties from **D. Lee Bassett**, S-P vice president.

Harold V. Logan is president of **Stone-Logan Corp.**, Milwaukee, successor to Stone Co. Inc. Formerly vice president, Mr. Logan succeeds the late **Otis S. Mitchell**.

Jeffrey Mfg. Co., Columbus, O., made **Walter J. Hulsey** district manager for the conveyor division in Birmingham. **Howard S. Davies**, conveyor division district manager in the Chicago office, moves to a similar post in the Pittsburgh district office. **James B. Green** replaces Mr. Davies at Chicago.

C. J. Washing was made sales engineer for **Wiretex Mfg. Co.** in territory covering Connecticut, Rhode Island, New Jersey, Delaware and Maryland. He has offices at Fairfield, Conn.

Aubrey H. Milnes, former vice president and works manager, was named executive vice president of **Steel Improvement & Forge Co.**, Cleveland. **Douglas T. McGinty** was appointed assistant to the president.

Four Wheel Drive Auto Co., Clintonville, Wis., elected **B. W. Heineman** a director and chairman of the board. He succeeds **Robert A. Olen**, retiring chairman who continues as a director.

Edward Pappert was appointed district manager at Pittsburgh for **United States Gypsum Co.**, a position formerly held by **J. P. O'Brien**, now sales manager of building steel products at Chicago.

Latrobe Steel Co., Latrobe, Pa., appointed **R. C. Kohl** special sales representative in its Buffalo territory. **R. A. Gleason** becomes district sales manager at Buffalo. **Joseph Breiner** is in charge of the newly opened office in Atlanta. All changes are effective Sept. 1.

OBITUARIES . . .

Alfred J. Porter, 58, a vice president and director of **Heppenstall Co.**, Pittsburgh, and manager at Bridgeport, Conn., died Aug. 11.

George March, 37, works superintendent at Central Furnaces and Docks, **American Steel & Wire Division**, U. S. Steel Corp., died in an industrial accident Aug. 23.

E. Porter Essley, 64, vice president and general manager, **E. L. Essley Machinery Co.**, Chicago, died Aug. 11.

Lucien I. Yeomans, 76, since 1922 president of **Lucien I. Yeomans Inc.**, Chicago, died Aug. 16.

Joseph H. Roberts Sr., 66, chairman of the board of **Edgcomb Steel of New England** and **Edgcomb Steel Inc.**, Nashua, N. H., died Aug. 14.

A. P. Steckel, 75, developer of the Steckel cold rolling steel process, died Aug. 19. He, with other industrialists, formed the **Cold Metal Process Co.**, Youngstown, in 1926.

Robert J. Stack, 49, president since 1951 of **National Automotive Fibres Corp.**, Detroit, died Aug. 16.

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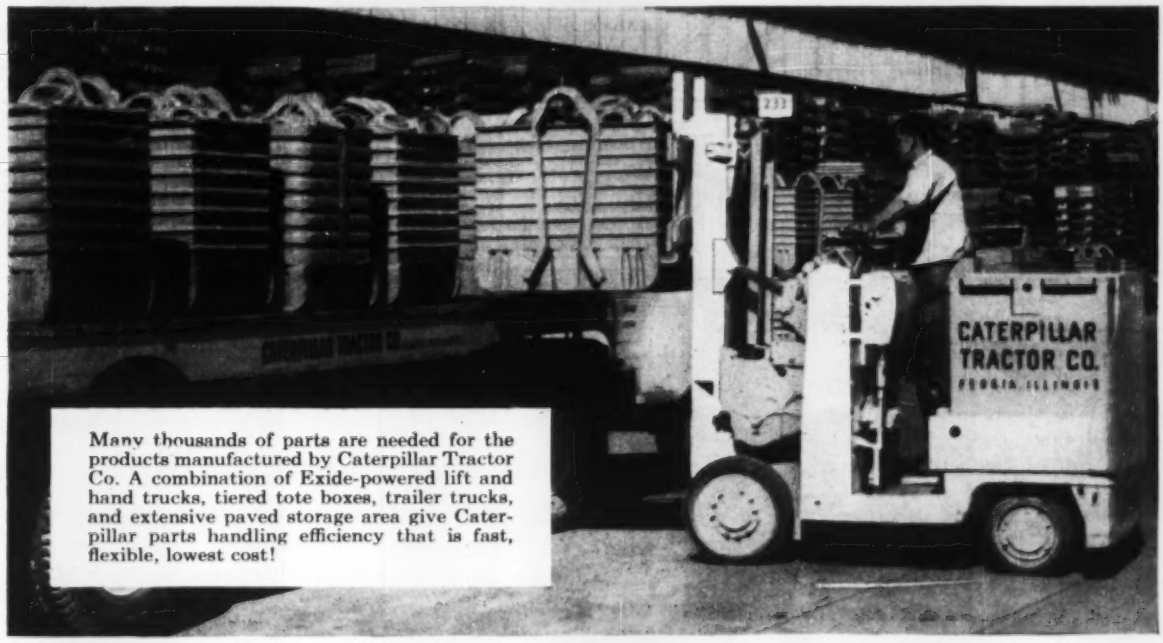
. . . with low cost Exide-Ironclad battery power!



Many thousands of parts are needed for the products manufactured by Caterpillar Tractor Co. A combination of Exide-powered lift and hand trucks, tiered tote boxes, trailer trucks, and extensive paved storage area give Caterpillar parts handling efficiency that is fast, flexible, lowest cost!

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STEEL is an active member of NBP

Weirton Expands Tin Mill

Capacity and operating speed of two electrolytic tin plating lines are increased

WEIRTON STEEL CO., Weirton, W. Va., a division of National Steel Corp., Pittsburgh, increased the capacity and operating speed of two electrolytic tin plating lines through a modernization program recently completed at its tin mill in Weirton.

On the company's newest line, No. 4, four plating cells were added. Prior to the improvement project, this line consisted of 24 plating cells with 24 generators of 7500 amp capacity.

The motor generators were replaced with 9000-amp units, and four generators were added for the four new plating cells. No. 4 line now consists of a total of 28 plating cells and 28 generators of 9000 amp each.

Moves Faster — Increasing the size of the generators resulted in a power increase of about 50 per cent, making it possible to run a larger percentage of strip steel through the tin coating line at maximum operating speed. The heating capacity of the reflow tower, where the tin plate receives its shiny surface through a remelt process, also was increased to correspond with the step-up in power of the generators.

The tin mill project also included construction and erection of a new plater frame on No. 3 line similar to the more modern arrangement of No. 4 and installation of new plating cells and rolls. The frame is mounted on a rubber-lined steel foundation pan, 100 ft long by 22 ft wide.

Twenty-four 5000-amp generators were removed from No. 3 line and replaced by the same number of 7500-amp generators that were removed from No. 4 line.

Ore-Chief Opens Terminal

U. S. Steel Corp.'s Tennessee Coal & Iron Division started normal operation of its ore terminal in Mobile, Ala., early this month. *SS Ore-Chief*, carrying 21,000 gross tons of iron ore, was the first of the big vessels to be used in conveying ore from Puerto Ordaz, Venezuela, to the Mobile terminal. This ore from U. S. Steel's Cerro Bolivar operations contains up to 60 per cent iron and is blended in Birmingham with lower grade local ores, the maximum iron content of which runs to 36 per cent.

McCulloch Motors Diversifies

McCulloch Motors Corp., Los Angeles, manufacturer of machine saws, opened a Light Metals Division as part of its product diversification program. The division will produce high-pressure magnesium and aluminum die castings.

Expands Heat-Treating Unit

Industrial Steel Treating Co., Huntington Park, Calif., erected a building adjacent to its main factory to expand heat-treating facilities.

Detroit Plant To Close

National Automotive Fibres Inc., Detroit, will terminate all manufacturing operations in its plant in that city after completion of 1954 model production. Enlarged facilities at other locations thereafter will handle this production. The firm's head office, experimental and development departments will be maintained in the Detroit area.

GE Forms New Department

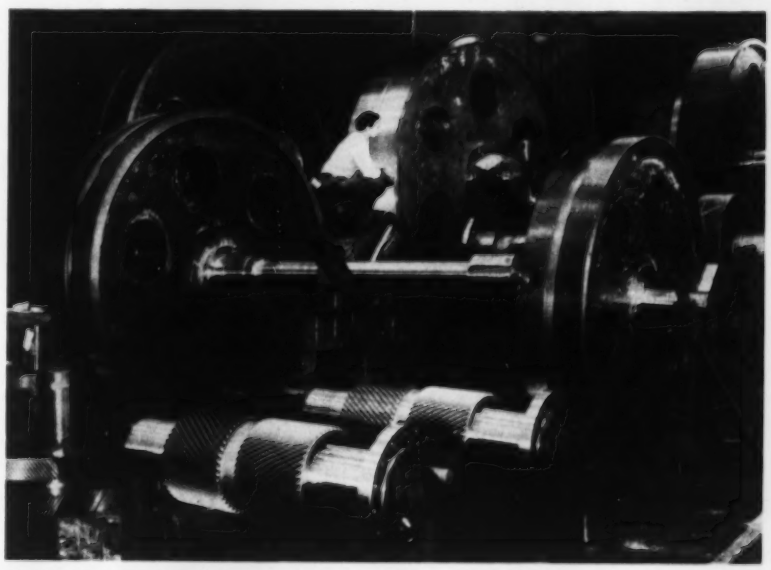
General Electric Co., Schenectady, N. Y., formed an Atomic Power Equipment Component which will market atomic power equipment for commercial use. The new unit will engineer, manufacture and sell various types of low-power reactors and reactor systems, heat transfer and cooling system components, safety and remote-handling devices for radioactive material and other related atomic reactor equipment.

Will Lease Greenville Plant

Deeco Inc., producer of tubular aluminum furniture, will lease a plant now being built by the Greenville Business Men's Association, Greenville, Pa. The building will be completed about Nov. 1 and manufacturing will begin Dec. 1. It replaces a plant at Canonsburg, Pa., which was shut down July 1.

Federal Electric Renamed

Federal Electric Products Co., Newark, N. J., recently merged



Ship's Gears Dwarf GE Engineer at Lynn, Mass., Plant

These gears reduce the relative stature of the pictured engineer as much as wheels for Paul Bunyan's mighty watch might dwarf a man of ordinary size. The two gears in foreground at GE's medium steam turbine, generator and gear department, Lynn, Mass., are low speed pinions for a ship's propulsion gear set; two in the middle, intermediate speed gears; in rear, low-speed propulsion gears

with its wholly owned subsidiary, Pacific Electric Mfg. Corp., San Francisco, and changed its name to Federal Pacific Electric Co. The firm makes electrical distribution and control equipment.

Hegeler Zinc Changes Hands

National Distillers Products Corp., New York, purchased all the assets of Hegeler Zinc Co., Danville, Ill. Hegeler owns a sulphuric acid plant located only 50 miles from an acid plant owned by National's U. S. Industrial Chemical Division at Tuscola, Ill. National is expected to offer for sale Hegeler's zinc rolling mill.

AMF Buys Potter & Brumfield

American Machine & Foundry Co., New York, purchased Potter & Brumfield Mfg. Co. Inc., Princeton, Ind., maker of electrical relays, fractional horsepower motors and electromechanical assemblies. An addition to the Princeton plant is contemplated.

Toledo Trailer Plant Closed

Brown Trailers Inc. is closing its Toledo, O., plant and moving the equipment to its Spokane, Wash., and Reading, Pa., plants. The firm recently completed a $1-million plant at Reading, designed specifically for the production of trailers.

Erects Laboratory Buildings

Columbia-Southern Chemical Corp., Pittsburgh, is erecting two laboratory buildings at Natrium, W. Va. One is designed for control and research work while the second building will house development and pilot plant operations.

Pipe Plant To Open Soon

Production of corrugated metal pipe at Armco Drainage & Metal Products Inc.'s plant in Jefferson City, Mo., is scheduled to get under way immediately, says S. R. Ives, president. The plant will fabricate metal drainage pipe, elliptically shaped pipe arch for use where headroom is low and special fittings to adapt the pipe and pipe arch to a wide variety of drainage conditions. The company is a subsidiary of Armco Steel Corp., Middletown, O.

Robertshaw-Fulton Expands

Robertshaw-Fulton Controls Co., Greensburg, Pa., announces that its subsidiary, Robertshaw-Fulton Controls (Canada) Ltd., acquired a plant at 580 Evans Ave., Toronto, Ont., for manufacture of thermostatic controls for customers in the kitchen range, water heater and space heater fields. Acquisition of the Canadian plant is linked with the parent firm's general expansion program. A $500,000 addition to its plant at Anaheim, Calif., was completed recently, and construction is proceeding on a $2.5-million plant at Long Beach, Calif. Production was begun recently in a new plant at Indiana, Pa.

Square D Enlarging Facilities

Square D Co., Detroit, will double expenditures for land, buildings and equipment this year over the $1,222,000 spent in 1953, says F. W. Magin, president. The firm operates electrical equipment manufacturing plants in seven United States cities and in Toronto, Ont., and Mexico City, Mexico. Square D has spent over $10 million in capital expansion since the end of World War II in more than doubling plant floor space.

Now You, Too, Can Weld

This amateur welder is using a new self-welding method to make a piece of furniture. This method, developed by Lincoln Electric Co., Cleveland, employs a special electrode, electrode holder and small AC welding machine. A person without training can make excellent welds the first time he tries and without touching his work

Lynchburg Foundry Co. Expands

A $1,250,000 addition for the manufacture of shell molded castings is nearing completion at Lynchburg Foundry Co., Lynchburg, Va. Limited production is already in process and the plant will be in full operation by the end of October. The addition is designed to produce gray and nodular iron castings by the shell molding process on a mass production basis. This foundry has 14 shell molding stations and complete core facilities with daily capacity for producing more than 100 tons of castings, ranging in size from a few ounces up to about 100 lb. Two new cupolas have been installed which are equipped with water-cooled protruding tuyeres and hot blast with temperatures up to 1000° F. A special forehearth arrangement is incorporated for the controlled end treatment of various grades of gray iron and the production of nodular iron.

Fletcher Dedicates Plant

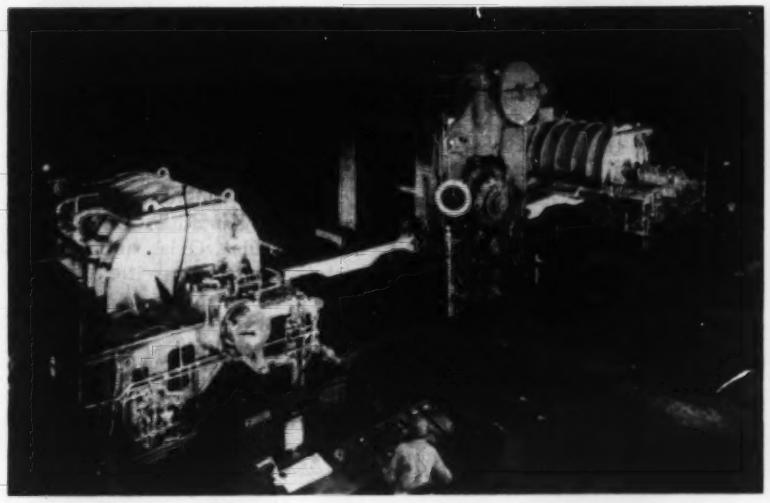
Fletcher Aviation Corp., Pasadena, Calif., dedicated a 121,000-sq-ft plant in Rosemead, Calif., for increased production of jettisonable fuel tanks and other aircraft components.

Coyne Cylinder Opens Plant

Coyne Cylinder Co., San Francisco, is operating its $150,000 plant at Memphis, Tenn. L. W. Fleischer, general manager of the firm, is directing sales and manufacturing operations of the new plant.

Steel Ball Firm Changes Hands

Controlling interest of Hartford Steel Ball Co., Hartford, Conn., passed to a group headed by Payson & Task, a New York investment firm. Stephen A. Zavoico, former president of Eagle Lock Co., is president of the company; T. H. Abbott, vice president; A. P. Holdebrandt, treasurer; and Dean K. Worcester, secretary. Hartford Steel Ball makes alloy steel, brass, Monel, aluminum, glass and plastic balls and pressed-ball bearings.



Lighter and wider coils and sheets flow as . . .

Newport Steel Corp. Opens Hot Reversing Mill

NEWPORT STEEL CORP., Newport, Ky., completed installation of a new 4-high hot reversing strip mill as part of its $9-million expansion and modernization program. This was announced by Robert E. Harvey, executive vice president and general manager. The new mill enables Newport to produce lighter and wider coils and sheets in gages of maximum uniformity to exact specifications.

Another new mill now under construction for cold-rolling steel is expected to be in operation by early 1955. This is a major item in Newport's program for further diversification of end products being forwarded since the company's acquisition early this year by Merritt-Chapman & Scott Corp., New York.

Other improvements recently completed by Newport include extensions to its pipe mill, culvert-coating equipment and new pipe and gutter machines.

Straight-line Setup — Newport Steel is one of the few mills in the United States where strip is rolled directly from ingot into finished coil in one straight-line operation. The new reversing mill is much heavier than the one it replaces, providing proportionately greater strength and precision control, important in achieving maximum uniformity of gage. Carl M. Riefkin, vice president in charge of sales, points out that its installation now enables Newport to supply its customers with more uniform hot-rolled and hot-rolled pickled coils and sheets in lighter gages than before. The new mill can produce coils up to 48 in. wide in a full range of steel analyses.

Manufactured for Newport by Continental Foundry & Machine Co., East Chicago, Ind., the mill size is 26 x 49 x 66 in. The two "work rolls" are 26 in. in diameter and the two "back-up rolls" are 49 in. in diameter. All rolls are 66 in. in body length and are housed in giant steel castings weighing more than 90 tons each.

The mill is powered by a 4000-hp dc reversing motor, with direct drive through a pinion stand. It is equipped with hydraulic roll balance, Timken antifriction "work roll" bearings and Morgoil "back-up roll" bearings.

Installation work was performed under the direction of A. P. Miller, vice president in charge of operations.

Weldment Fabricator Expands

To facilitate increased production of all types of welded pressure vessels, machinery bases, components and assemblies, United Tool & Die Co.'s Acme Welding Division, West Hartford, Conn., is building a plant addition. This new capacity will speed fabrication of very large weldments and also will increase efficiency of the firm's recently instituted x-ray service, says G. A. Firestone, general manager of the division.

Forms Pipe and Fittings Firm

Stainless Piping Supply Inc. has been organized with headquarters at 977 Virginia St., Charleston, W. Va. The firm supplies pipe, tubing, valves and fittings.

Burroughs Buys Haydu Bros.

Burroughs Corp., Detroit, acquired Haydu Bros. of New Jersey, Plainfield, N. J., maker of electronic tubes and components. The company will continue its operations under G. K. Haydu, formerly president, who has been named general manager.

Acheson Opens Sales Office

Acheson Colloids Co., Port Huron, Mich., a division of Acheson Industries Inc., opened a sales office at 545 Powers Bldg., Rochester, N. Y. Sales supervisor for western New York and western Pennsylvania is E. A. Lampman.

Tool & Die Plant To Expand

Stanhope Products Co. purchased Brookville Tool & Die Co., both of Brookville, O. Contemplated expansion plans for the latter property will provide required room for the production of special high-speed automatic punch press feeding devices.

ASSOCIATIONS

L. West Shea will become a part of R. K. Hanson Associates' staff on Sept. 15. He will devote his time to materials handling sales and marketing consultation and trade association activities. R. K. Hanson is managing director of **Material Handling Institute Inc.**, Pittsburgh.

Worcester Pressed Steel Co., Worcester, Mass., is sponsoring in association with **Pressed Metal Institute**, Cleveland, the Presteel Award, a new annual recognition of the individual or company selected as having made significant

contributions to the advancement of the metal stamping industry. Sponsorship of the award is part of Worcester Pressed Steel Co.'s 50th anniversary of its incorporation.

Edwin T. Lorig, chief development engineer, U. S. Steel Corp., Pittsburgh, will be the recipient of a John Price Wetherill Medal of the **Franklin Institute,** Philadelphia, at the institute's annual medal day ceremonies on Oct. 20. The award is being made "in consideration of his invention of the Lorigaligner, a novel and valuable type of self-centering roll used in the rolling of steel strip and tin plate, resulting in the manufacture of a better product at a higher rate of speed with less spoilage."

Joseph F. Miller was appointed assistant managing director, **National Electrical Manufacturers Association,** New York. Norman Wicks was appointed manager of the association's business development department.

Dr. Ralph A. Schaefer, vice president and materials development director, Clevite-Brush Development Co., a division of Clevite Corp., Cleveland, was elected supreme president of **American Electroplaters' Society,** Jenkintown, Pa.

Headquarters of **Foundry Equipment Manufacturers Association Inc.** have been moved to No. 1 Thomas Circle, Washington 5. W. B. Wallis, president, also announces appointment of C. R. Heller as executive secretary-treasurer who is in charge of the new office.

Armour Research Foundation of Illinois Institute of Technology, Chicago, reorganized its ceramics and minerals research department. A new research section, headed by Dr. K. C. Vincent, has been created which is concerned with the beneficiation of ores. Albert Litvin is supervisor of the building technology section, known previously as the masonry materials section. J. Scott Griffith is supervisor of the geology and mineralogy section, formerly known as the minerals section.

REPRESENTATIVES

Allied Chemical & Dye Corp.'s Semet-Solvay Division, New York, appointed Wilson & Geo. Meyer & Co., San Francisco, as its industrial coke representatives in western United States and in the province of British Columbia, Canada. Semet-Solvay's four merchant coke plants, located in Ironton, O., Ashland, Ky., Buffalo and Detroit, have a rated capacity of 3,750,000 tons per year.

Hydraulic Press Mfg. Co., Mt. Gilead, O., appointed as distributors of its hydraulic machinery Mine & Smelter Supply Co., Denver and El Paso, Tex.; and Todd Machinery Co., Salt Lake City, Utah.

Hause Engineering Co., Montpelier, O., maker of drill units, appointed the Frank M. Wilson organization as its representative in western and central New York. The latter organization has offices in Buffalo and Syracuse, N. Y.

Mead Specialties Co., Chicago, appointed the following to act as distributors and factory representatives for its line of air cylinders and other air-operated devices and sanding machines: J. B. Morrison Machinery Co. Ltd., Toronto, Ont.; and L. S. Tarshis & Sons Ltd., Montreal, Que.

Ready Tool Co., Bridgeport, Conn., appointed Littlejohn Co., Los Angeles, as its representative for Southern California, Arizona and southern Nevada. Ready Tool Co. manufactures machine tool accessories, grinder and milling machine dogs.

Chemical Corp., Springfield, Mass., appointed M. A. Wegenhart, Madeira, O., as its representative to handle sales of chemical-resistant reinforced plastic materials to the electroplating and chemical processing industries in Ohio, Indiana, Michigan and Kentucky.

Clark Equipment Co., Buchanan, Mich., appointed George Industrial Equipment Co. Inc., New York, as distributor of its fork-lift trucks and other materials handling equipment in that area. In addition to sales, the dealer will handle all leasing of equipment under Clark's new leasing plan.

Standard Transformer Co., Warren, O., appointed Peterson Engineering, Tulsa, Okla., as its representative in that territory.

Shear-Speed Chemical Products Division, Michigan Tool Co., Detroit, appointed the following as distributors of its cutting fluids in their respective territories: W. E. Ziegler, Los Angeles; L. P. Degen Belting Co., San Francisco; and Chemical Sales Co., Denver.

Kirkhof Mfg. Corp., Grand Rapids, Mich., appointed Dix Engineering Co. Inc., Lincoln Park, Mich., as its sales engineering representative in the Detroit area. The engineering services of Dix, including designing and building of special fixtures and necessary operational equipment for welding, will be augmented by the Kirkhof resistance welding transformers, special resistance welding machines and automation units.

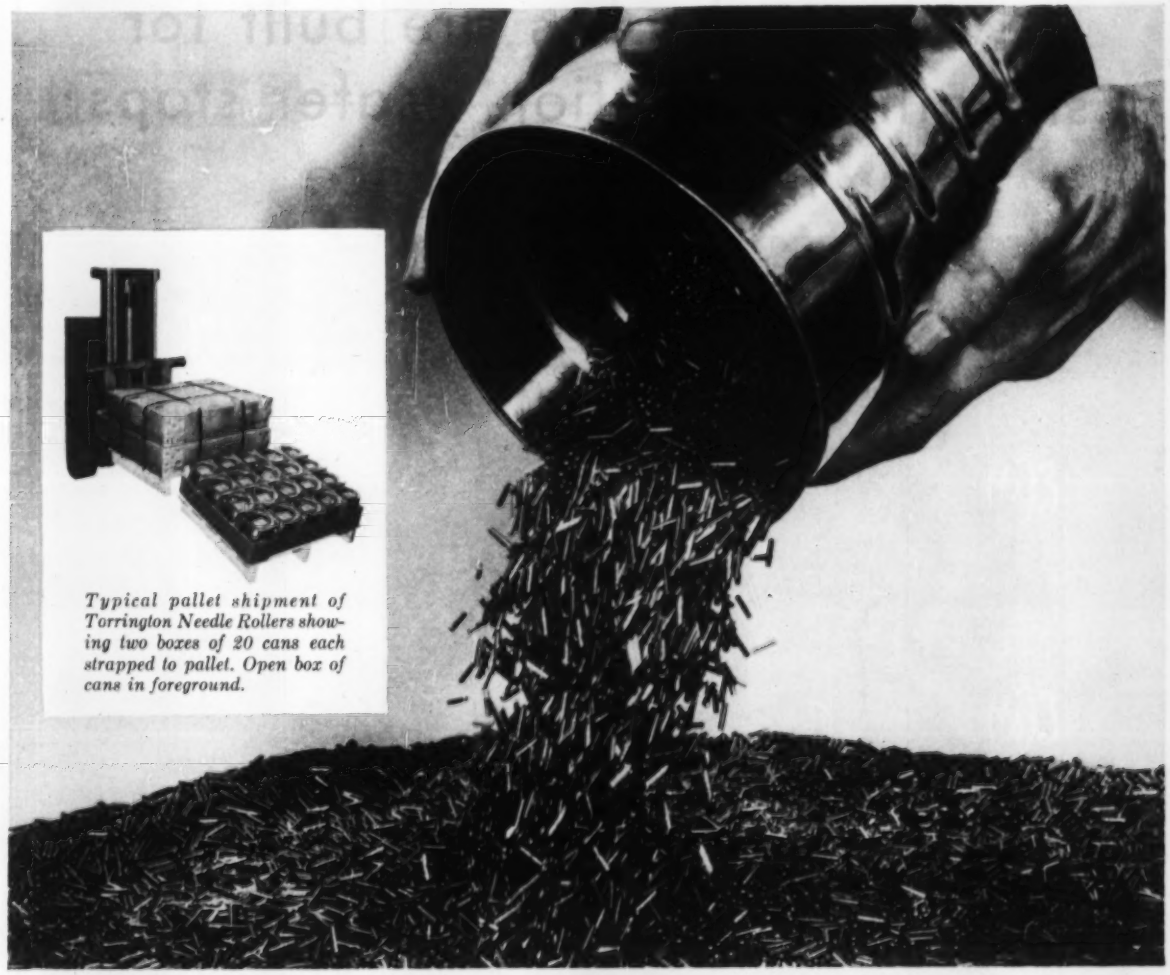
Taft-Peirce Mfg. Co., Woonsocket, R. I., appointed Cowan Supply Co., Atlanta, as its representative in that territory. Cowan will handle its standard lines of gages, magnetic chucks and toolroom equipment.

NEW ADDRESSES

R & S Tool Co., manufacturer of tungsten carbide and high-speed cutting tools, moved into its new plant at 13100 Enterprise Ave., Cleveland 11. R & S is an affiliate of Truman E. Longley Co., Cleveland.

Berndt-Bach Inc., maker of cameras and equipment, moved into its new plant at 6900 Romaine St., Hollywood, Calif.

Lyall Crissman Co., franchise representative for Automatic Transportation Co., Chicago, moved to 421 Lebanon Blvd., Pittsburgh.



Typical pallet shipment of Torrington Needle Rollers showing two boxes of 20 cans each strapped to pallet. Open box of cans in foreground.

Torrington Needle Rollers—Vacuum-Packed for Cleanliness—Palletized for Easy Handling

Torrington Needle Rollers by the millions are now being vacuum-packed in tin cans to protect them from dirt, moisture and damage. The foods you eat are not packed with greater care.

This new vacuum pack permits us to send you rollers *dry*—free from oil or grease—so that they can go into your loading machines direct from the can, without time-consuming degreasing.

To make shipping and handling easier, we pack these cans 20 to a carton and strap two cartons to an expendable wooden pallet, for a total weight of about 1500 lbs. per pallet. This makes an easy load for your fork lift trucks to handle and store.

Torrington Needle Rollers deserve this special vacuum pack. They're precision rollers made under statistical quality controls of extraordinary rigor. Every step from alloy selection to polishing and packing is carefully checked to assure you that every can of rollers you receive meets your high standards. And to help you use these rollers to best advantage, Torrington's engineering staff is always available to assist in application design and testing.

Always specify Torrington for precision Needle Rollers in prime condition. In stock for immediate volume shipment.

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Torrington, Conn. South Bend 21, Ind.

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TORRINGTON NEEDLE BEARINGS

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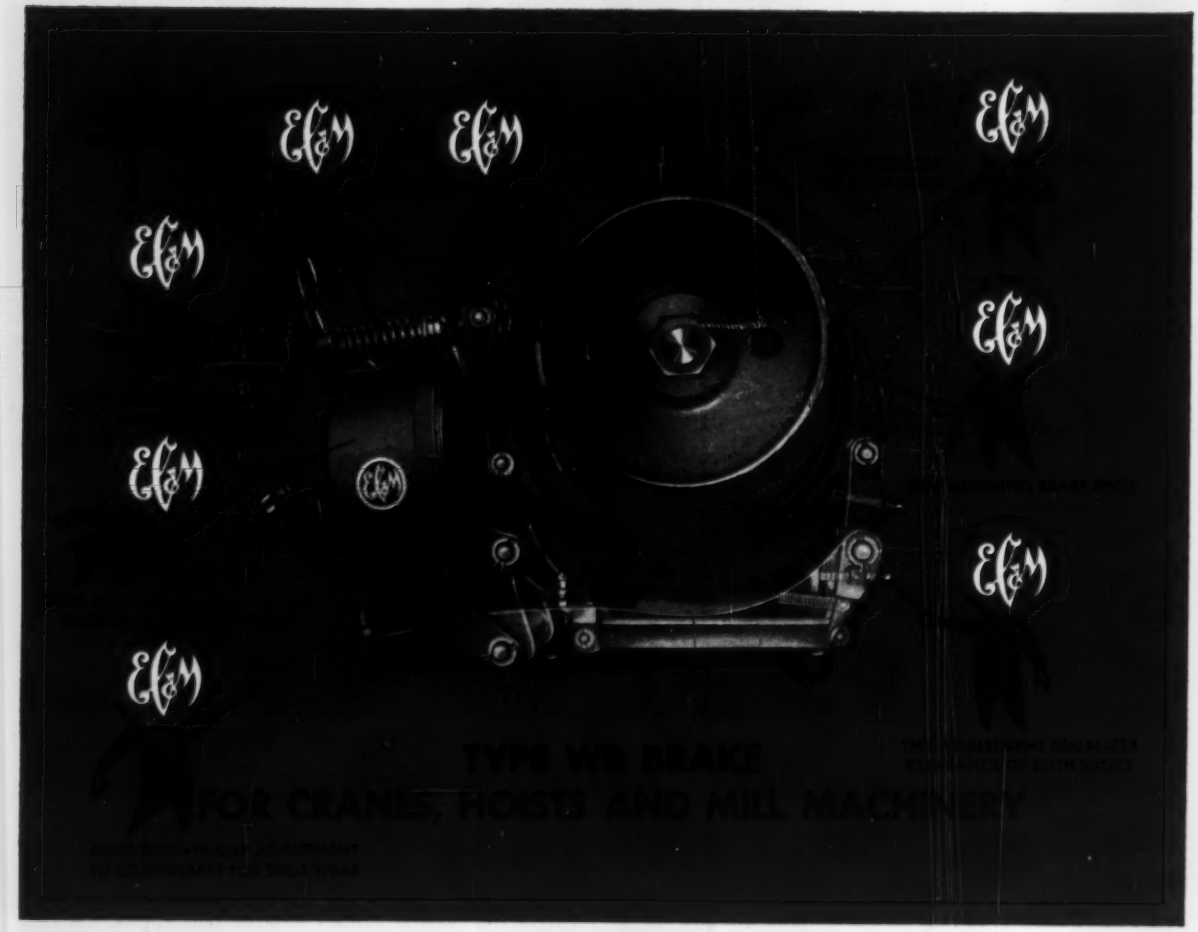
EC&M brakes are built for smoother operation • safer stops • less maintenance



Take a close look at the world's finest heavy-duty brake. Built for both alternating and direct current motors . . . Type WB Brakes are available in 7 sizes for D-c and 4 sizes for A-c operation.

EC&M has combined the finest materials and workmanship with years of experience and engineering research to assure trouble-free service. When you need a brake that is "performance proven" . . . a unit that provides smoother operation, safer stops and less maintenance . . . specify EC&M Type WB Brakes.

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STEEL
August 30, 1954

Technical Outlook

LUBRICATION BY TUMBLING—Lifetime lubrication can be obtained for many mechanical parts by bonding dry molybdenum disulfide on bearing surfaces, a development of the Alpha Corp., Greenwich, Conn. Surface of the work is given a special preparation, then tumbled in the powdered synthetic lubricant. Parts treated include: Camera shutter blades, gears, pinions, nylon bushings, cams, shafts, gimble bearings, slides, racks, clutch plates and many others.

DESIGNING WITH ELECTRONS— Ford engineers are using a device called a field flow plotter to cut design testing time from months to hours. The plotter traces air flow lines electronically on cross-sectional auto diagrams to determine, for instance, whether a grille lets enough air pass. Another use: To help measure effects of high operating temperatures on valves and pistons.

ALUMINUM-TO-CERAMIC— Lightweight aluminum can replace heavier conventional metals in some electrical products by virtue of a new aluminum-to-ceramic joining process. General Electric Co. says its development will have principal application to items requiring insulated hermetic seals.

MORE SHELL MOLDING— Lynchburg Foundry Co.'s $1,250,000 addition for shell molded casting production will be in full production by October at the Lynchburg, Va., works. Fourteen shell molding stations and complete core facilities have a capacity of about 100 tons of gray and nodular iron castings a day.

HEATER MAINTENANCE— Permanent impingment air filters installed at the back of space heaters in Timken Roller Bearing Co.'s Canton and Gambrinus plants whipped an expensive oil and dust cleaning problem. Instead of dismantling and steam cleaning the heaters, Timken simply removes and washes the filters. Similar setup works on flues and smokestacks in the roller-hardening department.

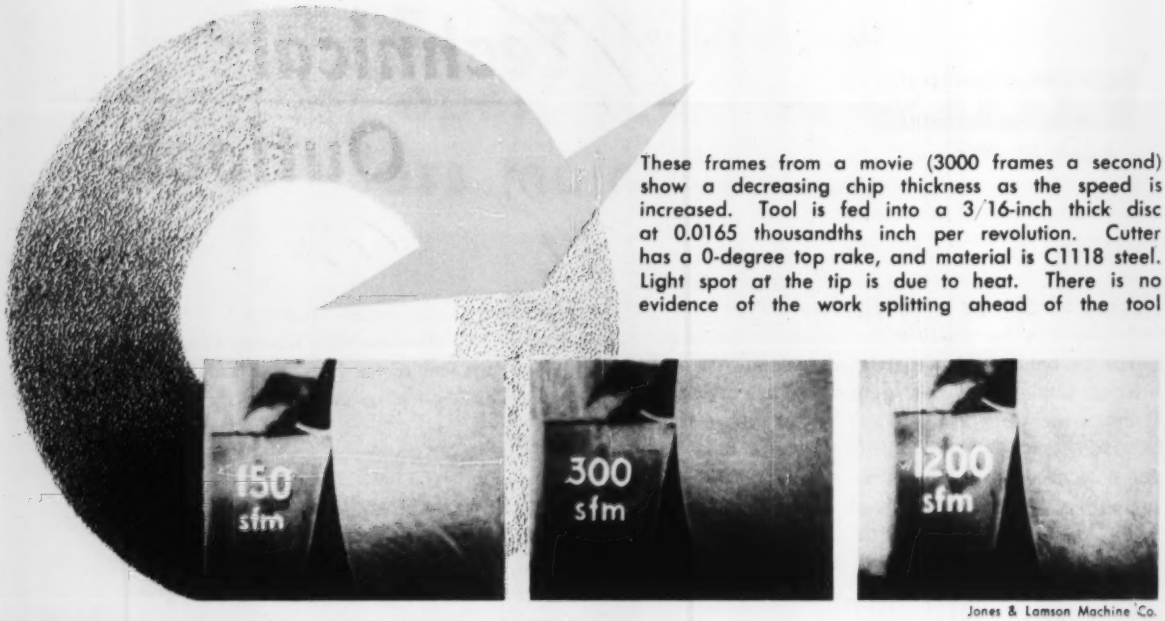
STAINLESS-TO-ALUMINUM—Latest use of the Al-Fin process is a break for housewives. It puts a layer of chromium-nickel stainless (about 0.08 pound) on soft aluminum ironer bottoms. The bond produces a hard, durable surface. Development involved work with Doehler-Jarvis Corp. on a pressure die-casting technique for flattening the stainless.

TITANIUM CUTTING— One rule applying to titanium cutting is that the whole setup (tool, workpiece and machine) must be rigid. Another rule, according to John Kahles, Metcut Research Associates Inc., Cincinnati, is that a little dullness in the tools is too much. Because of titanium's unique ability to coat other metals, a dull cutting edge soon is covered with a layer of titanium, and won't cut. Tools that look sharp, and that will still cut steel, just won't walk through titanium.

NEW SPECS— Two task groups from the electrical equipment industry are preparing simplified federal specifications for metallic and nonmetallic outlet boxes. They're working with the electrical equipment division, U. S. Dept. of Commerce. Recommendations are expected to be ready by the middle of September.

REDUCTION GEAR— San Francisco Naval Shipyard reports development of a pneumatic angle drive reduction gear with 212 to 1 ratio. The device is substituted for the conventional spindle of a corner drill and develops drive with spindle speed of 10 to 20 rpm.

Metalworking Outlook—p. 21 *Market Outlook—p. 101*



These frames from a movie (3000 frames a second) show a decreasing chip thickness as the speed is increased. Tool is fed into a 3/16-inch thick disc at 0.0165 thousandths inch per revolution. Cutter has a 0-degree top rake, and material is C1118 steel. Light spot at the tip is due to heat. There is no evidence of the work splitting ahead of the tool

Jones & Lamson Machine Co.

PRACTICAL CUTTING SPEED . . .

It's Faster Than You Think

More than a researcher's pipe dream, high cutting rates are working out in production. Economics fix the practical point in the wide range of what's possible

By R. F. HUBER
Machine Tool Editor

TOMORROW you may be cutting steel at 3000 sfm. What's more, you may be doing it straight across the production board, not on just one or two special jobs.

Researchers in metalcutting are quick to admit they don't know how far you'll be able to go with tomorrow's machines, tool materials, cutting fluids and easier-to-cut materials. They'll also state, with equal haste, that some practical limits tell you how far to go today.

New Base Range — Fantastic speeds have been attained, but they don't necessarily tell the story of what's practical on the job. Some of them, however, (say in the 500 to 1200-sfm range) are being used every day in production.

First qualification for the new ranges is that they are limited almost entirely to carbide-tooled jobs. Second, accelerated speeds are most likely to succeed, from the cost angle, on jobs where a reduction in cutting time will make a reasonable cut in total cycle time.

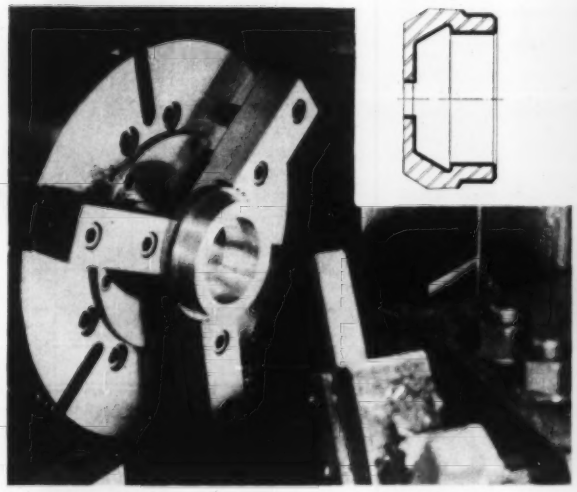
Case in Point — One production man tells of a turning and facing job on an engine lathe. Floor-to-floor time per piece was 15 minutes, but much of this was spent positioning cutters and checking diameters, gaging shoulders, etc., plus loading and unloading. In fact, when checked with a stopwatch, it turned out only 4 minutes of the 15-minute cycle was spent cutting metal.

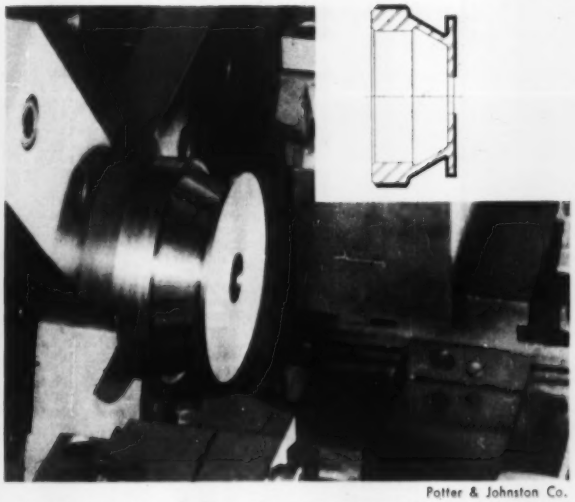
Handling time, not cutting time, was the area for attack. Even if cutting time is halved (to 2 minutes), cycle time would still take 13 minutes.

The most fertile cost-reduction area for high speed is in the field of automatic machines, which have little idle time, or in operations such as milling, where a large per cent of the total time is spent removing metal.

The Lag—Higher speeds would probably be in more general use but for one factor—many production men still think of them as suitable only for the laboratory, or for the rare, special job.

Advice of the men who've done the research on high-speed cutting is: "Try the higher speeds. They've





Potter & Johnston Co.

This aircraft part was recently tooled up for high-speed cutting. Material is stainless steel forging. For example, in first operation (left), OD is rough turned at 650 sfm; open end is faced at 800 sfm; large ID is semi-finished at 1080 sfm. In the second chucking (right), OD is turned, with 2 tools, at 1080 sfm, and face and groove are both roughed and finished at 1000 sfm. These parts will be turned out at these speeds in production. Cycle time on this automatic turret lathe is 2.65 minutes, including load, unload as well as machine index

been proved possible in any one of a dozen labs, and they're being proved practical in production."

Spreading the Word — Biggest job to be done, these experts feel, is one of education. Users must be acquainted with what's possible, and must be informed on the limiting factors of economics, equipment, etc.

Jones & Lamson Machine Co., Springfield, Vt., is meeting the educational problem head on with production seminars. The sessions started in May, 1952. They've told some 600 production men from all over the country the facts about high-velocity turning. Many other companies are using similar, or less formal, programs to inform customers.

Reports from Curtiss-Wright Corp., which prepared the 3-volume Air Force machinability report, indicate that users who have applied the information to their own production lines have averaged 33 per cent in cost savings.

Practicality — Most important aspect of faster metal removal is expressed in dollars and cents. Once you know a given material can be cut readily at any one of a wide variety of speeds, your choice of the right speed for a job is a matter of economics.

For example, at 1000 sfm total cost per piece might be 10 cents. At 600 sfm, the cost may drop to seven cents. Below that, the cost of time spent cutting could force the total back up. The 600-sfm range would be the economical one in this instance.

Pro and Con—Biggest deterrent to higher speeds is the higher cost of tool maintenance. As speed goes up, tool life goes down, and the cost of keeping tools operational soars.

Reason for increasing speed, cost-wise, is the drop in time required to remove a given amount of metal. Any decrease in this time will cut a proportionate amount from its cost. (See chart on page 66 for cost curves.)

Others—Idle time also must be added to the equation—loading and unloading, machine index, cutter advance and return, etc. This is usually constant, regardless of cutting speeds.

Idle-time cost may be high or low. In a job shop, where most work is done in short lots, this may account for 60 to 80 per cent of the total cycle time. In a high-production shop, where most work is performed on automatic machines, it may represent a fraction of the total.

Better Surface — A by-product of high-speed cutting, by the way, is that workpiece finish generally improves. Poor finish is often caused by the buildup of material on the cutter edge, with intermittent sloughing off between the cutter and the workpiece.

Hans Ernst, director of research, Cincinnati Milling Machine Co., points out, ". . . as you increase the speed, the friction between the chip and tool decreases." Buildup on the tool is decreased and the finish improved.

Tool Talk—The shear angle increases (thinner chip) at high speed, and it becomes more practical to use negative rakes on cutters. Negative rakes make for a more rugged tool; they also aid in dissipation of heat. Apparently at the higher temperatures, clearance angles become less critical.

Engineers at Carboloy Dept., General Electric Co., point out that the problem of braze strains is more critical at high speeds. One solution is to braze to a carbide shank, so both materials have the same coefficient of expansion. They also point out that mechanically-held tips will eliminate this problem.

Carbides for higher cutting speeds must have both higher edge-wear and higher crater resistance. W. L. Kennicott, chief engineer, Kennametal Inc., Latrobe, Pa., points out: "Due to reduced forces at high speeds, we don't need as much strength in the tip material

Cutting Speed Numbers for Steel and Cast Iron(a)

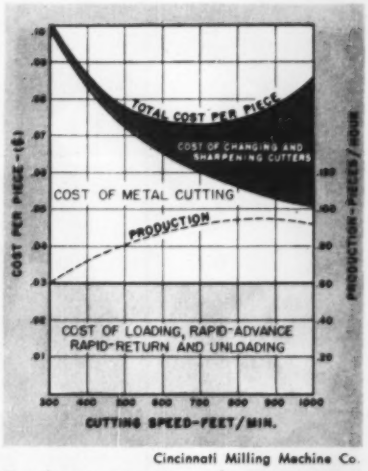
Alloy(b)	Condition or Heat Treatment(c)	Structure(c)	Bhn	Speed Number(a) HS Steel(d)	Speed Number(a) Carbide(e)
		STEELS			
1112	Hot Rolled	10% P, 90% F	135	220	800
1020	Annealed	10% P, 90% F	115	150	550
8620	Annealed	30% P, 70% F	135	150	480
3140	Annealed	75% P, 30% F	190	75	280
3140	Q & T	Temp Mart	302	55	200
4140	Annealed	65% P, 35% F	180	80	330
4140	Annealed	90% P, 10% F	192	75	225
4140	Spher	Spher	166	125	560
4140	Q & T	Temp Mart	300	55	210
4140	Q & T	Temp Mart	400	35	190
4340	Annealed	100% P	221	70	260
4340	Spher	Spher	206	80	375
4340	Q & T	Temp Mart	300	45	260
4340	Q & T	Temp Mart	400	30	225
4340	Q & T	Temp Mart	500	15	125
5140	Annealed	80% P, 20% F	192	85	240
8640	Annealed	50% P, 50% F	170	125	325
8640	Annealed	75% P, 25% F	190	90	280
8640	Spher	Spher	180	130	375
8640	Hot Rolled	W	250	85	310
8640	Q & T	Temp Mart	300	60	...
8640	Q & T	Temp Mart	400	40	150
52100	Spher	Spher	190	100	275
1345	Annealed	80% P, 20% F	207	80	290
4817-H	Annealed	W Spher	217	90	450
9262-H	Annealed	100% P(f)	255	60	150
14B45	Annealed	60% P, 40% F	167	150	295
94B17	Annealed	40% P, 60% F	167	150	540
80B40	Annealed	100% P	212	80	260
81B40	Annealed	95% P, 5% F	207	80	290
86B45	Annealed	95% P, 5% F	212	65	...
98B40	Annealed	100% P(f)	202	80	330
50B60	Annealed	100% (g)	205	95	220
Cast 1020	Annealed	30% P, 70% F	122	160	400
Cast 1020	Normalized	30% P, 70% F	134	135	230
Cast 1040	Dbl Norm	70% P, 30% F	185	130	400
Cast 1040	Norm & Ann	60% P, 40% F	175	135	380
Cast 1040	Normalized	70% P, 30% F	190	120	325
Cast 1040	Norm & O Q	80% P, 20% F	225	80	310
Cast 1330	Normalized	60% P, 40% F	187	75	140
Cast 1330	Norm & Temp	60% P, 40% F(h)	160	120	230
Cast 4130	Annealed	50% P, 50% F	175	95	260
Cast 4130	Norm & Spher	Spher	175	90	200
Cast 4340	Norm & Ann	85% P, 15% F	200	60	210
Cast 4340	Norm & Spher	Spher	210	95	290
Cast 4340	Q & T	Temp Mart	300	45	200
Cast 4340	Q & T	Temp Mart	400	35	180
Cast 8430	N & T 1200 F	Fine Spher	200	90	200
Cast 8430	N & T 1275 F	Fine Spher	180	110	240
Cast 8630	Normalized	70% P, 30% F	240	75	180
Cast 8630	Annealed	55% P, 45% F	175	120	290
		CAST IRONS			
Gray Iron	Annealed	100% F	100	...	800
Gray Iron	As-C Slow Cool	Coarse P	195	...	320
Gray Iron	As-C Fast Cool	Fine P	225	...	270
Gray Iron(i)	As-Cast	Acicular	262	...	170
Nodular 1	As-Cast	80% P, 20% F	265	...	220
Nodular 2	As-Cast	40% P, 60% F	215	...	320
Nodular 3	As-Cast	40% P, 60% F	207	...	380
Nodular 1	Annealed	3% P, 97% F	183	...	500
Nodular 3	Annealed	100% F	170	...	780

(a) Cutting speed number is the cutting speed in feet per minute which causes a given flank wear land on the tool in 60 min. Flank wear land on high speed steel tools was 0.060 in.; on carbide tools, 0.015 in. for cutting steel and 0.030 in. for cutting cast iron. All of the results are for turning operations. The depth of cut was 0.062 in. and feed 0.009 ipr for high speed steel tools; for carbide tools, depth of cut was 0.100 in. and feed was 0.010 ipr. (b) Carburizing steels (0.20% C) are usually received in the hot rolled condition; medium-carbon steels, either hot rolled or annealed.

(c) Abbreviations used in this table: Ann, annealed; As-C, as-cast; Dbl, double; F, ferrite; Mart, martensite; N or Norm, normalized; O, oil; P, pearlite; Q, Quenched; Spher, spheroidized or spheroidite; T or Temp, tempered; W, Widmanstatten.

(d) 18-4-1 high speed steel. (e) General-purpose cast iron grade of carbide for cutting cast irons; general-purpose steel grade for steels. (f) Partly spheroidized. (g) Coarse pearlite. (h) Pearlite spheroidized. (i) High-alloy cast iron.

American Society for Metals Committee on Machining, 1954 Supplement to Metals Handbook


TOTAL COST PER PIECE
COST OF CHANGING AND SHARPENING CUTTERS
COST OF METAL CUTTING
PRODUCTION
COST OF LOADING, RAPID-ADVANCE RAPID-RETURN AND UNLOADING
COST PER PIECE - ($)
PRODUCTION - PIECES / HOUR
CUTTING SPEED-FEET/MIN.

Cincinnati Milling Machine Co.

Total cost per piece drops as speed increases, but then heads up as the cost of changing and grinding tools rises. Optimum speed here: 700 sfm

. . . we can go to harder materials." This helps extend cutter life.

Cutting Fluids—J. F. Kahles, Metcut Research Associates, Cincinnati, says, "Cooling is the most important function of a cutting fluid in high-speed machining." While job conditions will influence choice of coolant, he recommends use of water-soluble oils, because of their high cooling ability.

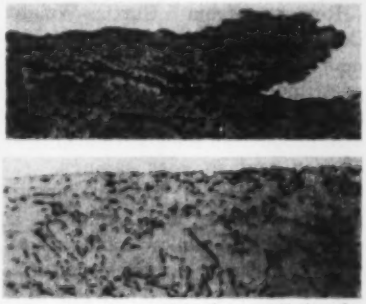
Where possible, aim a stream of coolant from beneath the cutter and another across top of cutter, both directed at cutting area.

Machine Features — High-speed cutting requires an increase in horsepower and rigidity. Adequate chip guards must be provided. While this will sometimes require new machines or equipment, it often can be done with the machine you have.

At Gorham Tool Co., Detroit, all metalcutting jobs are being checked. After attending the Jones & Lamson seminars, management was quick to apply much of the information they got. In some cases they have increased machine horsepower, but in most instances, the jobs are done on machines they had. J. L. Prisk, general superintendent, says Gorham will use higher speeds wherever they fit.

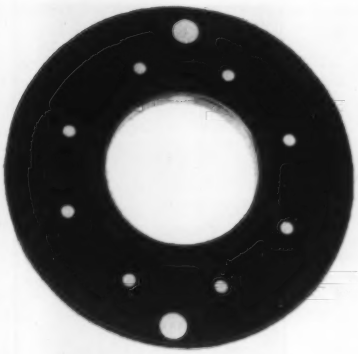
Representative—While much of the talk about cutting faster is directed at turning, it applies (with few modifications) to other forms of metalcutting. Principles of chip flow, cutter suport, etc. apply to all.

Speed tables, like the one on this page, should be used as starting points. After that, the economics come in to dictate the best speed for the job.



Jones & Lamson Machine Co.

Improvement in surface finish shows up in these two photographs at 750 magnification. C1118 steel in both cases, top was cut at 100 sfm, bottom at 600 sfm. Feed was 0.0165 ipr



Compressor seal, top left, made by Sealol Corp. has flame-plated sleeve to increase its service life

Wire straightening rollers at right are flame-plated. Result: Greatly increased resistance to wear

Flame-Plating Process . . .

Increased Service Life for Metal Parts

Thin coatings of tungsten carbide are deposited on the surfaces of parts and tools where extra resistance to wear is required. Method solves many of industry's wear problems

FLAME PLATING is a way of putting a tungsten carbide surface on metal parts. The deposit, a hard, wear-resistant coating, can be applied in thicknesses ranging from 0.002 to 0.010-inch.

Developed by Linde Air Products Co., a Division of Union Carbide & Carbon Corp., the flame method gives an excellent interlocking bond between coating and base metal with no voids or interruptions. The surface welding reaction at the interface is microscopic in depth. An extremely tenacious bond is obtained.

One major advantage is that the temperature of the base piece does not usually exceed 400° F during the plating operation. Distortion and physical change are reduced to a minimum.

Points—The cost of flame-plating usually will be somewhat lower than solid sintered tungsten carbide; however, in some cases, somewhat more than other surfacing methods. The outlay of dollars balanced against the advantages of increased production with less rejects, decreased downtime of machines from maintenance and replacement of parts and the possibility of a decrease in lubrication problems make it a good investment.

It is best suited to applications where allowable wear is comparatively small and where the part will support the thin tungsten carbide coating.

Example — Down-time costs on wire forming machines have been reduced at Nixdorf-Krein Mfg. Co. by using this process. Wire straightening rollers are flame-plated with tungsten carbide so that small and large wires can now be processed in succession without scoring the stock or replacing rollers.

The tungsten carbide coating is left in as-coated condition (similar to fine emery paper) to obtain an effective gripping surface which produces the rotation necessary to avoid excessive wear. Besides reducing down-time, a better product is produced.

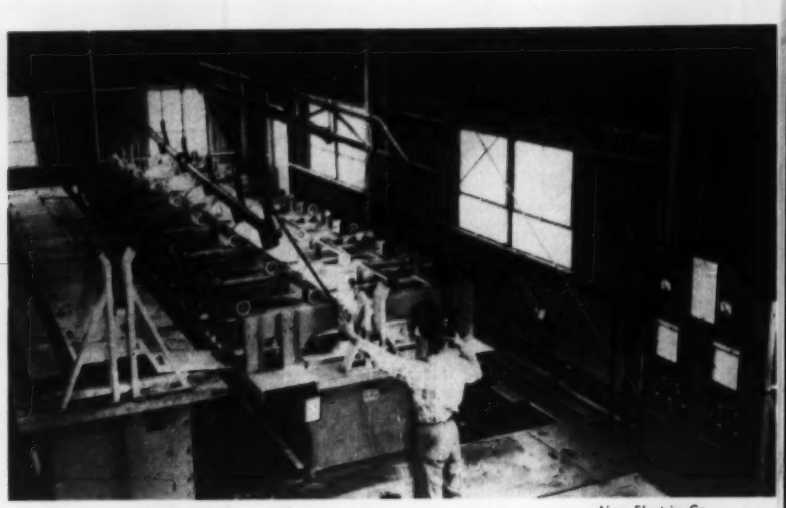
And Elsewhere — Plug gages, spindles, bearings, mandrels, collets, finger pads, engine shaft seals and aluminum castings are other applications where the process stands up to wear and makes possible an unusual combination of metallurgical properties.

Flame-plated steel plug gages have wear-resistance better than sintered tungsten carbide gages plus resistance to chipping or breaking. In the case of plated aluminum castings, the desirable properties of light weight and low inertia are retained plus the value of high wear-resistance. Bearing failures, believed to be the result of fusion of the fine surface particles caused by instantaneous high skin temperature, are minimized or eliminated because of the high fusion temperature and relatively low coefficient of friction.

How the Future Looks — Since the process at present offers only tungsten carbide coating, it is not a cure-all for all wear problems. Considerable research is and has been in progress to develop new coatings.

No. 8 in STEEL's MODERN HEAT TREATING SERIES

SALT BATH HEAT TREATING . . .



Ajax Electric Co.

What is said to be the world's longest isothermal quench bath is used for martempering Piasecki helicopter rotor spars. The parts of SAE 4340 steel, 20 feet long and weighing 90 pounds, are fixtured horizontally in a cradle-type fixture and austenitized in a neutral salt at 1550°F. Spars are then quenched in salt at 500°F and drawn at 1050° F to get Rc 34 to 38. Distortion is only ¼-inch bow from end to end

Old Process with New Ideas

Versatility of salt baths for heating and cooling metals gives them a wide range of uses. Today's isothermal method gives new physicals to metals and holds down distortion

MOLTEN SALT BATHS can be used for almost any heat treating job above 350° and below 2400° F. They also have unique features that form the basis for some of today's most advanced methods.

For instance, molten salt vigorously agitated has high cooling power, a property relied upon in modern isothermal heat treatment. Metal parts are endowed with new physicals. Distortion is held to a minimum, meaning that many components can be finish-machined while soft, before hardening.

Basic Factors — Versatility is still the clincher among men who plan production (see illustration). From the check book end, you hear about the comparatively low capital investment and economies in floor space.

The metallurgist is interested, too: Heating is by conduction. Work, when immersed in molten salt, is completely bathed; the rate of heat transfer is rapid, 4 to 6 times faster than radiation, and uniform. (Some parts may present a special problem because they float or drag out too much salt due to contour and recesses.)

Scaling and decarburization, two major difficulties in handling metals at high temperatures, are controlled. Since air cannot come into contact with hot work, scaling is eliminated. Neutrality of the salt can be maintained to avoid decarburization.

Distortion Less — Metal loaded into a molten salt bath is immediately coated with a solid cocoon of salt. Work has the benefit of a built-in preheat that prevents excessive heat shocks and damage from distortion or cracking.

Another factor: Salts are two to three times heavier than water; buoyancy decreases the weight of a part as much as 35 per cent. There is less force to distort work while it is plastic.

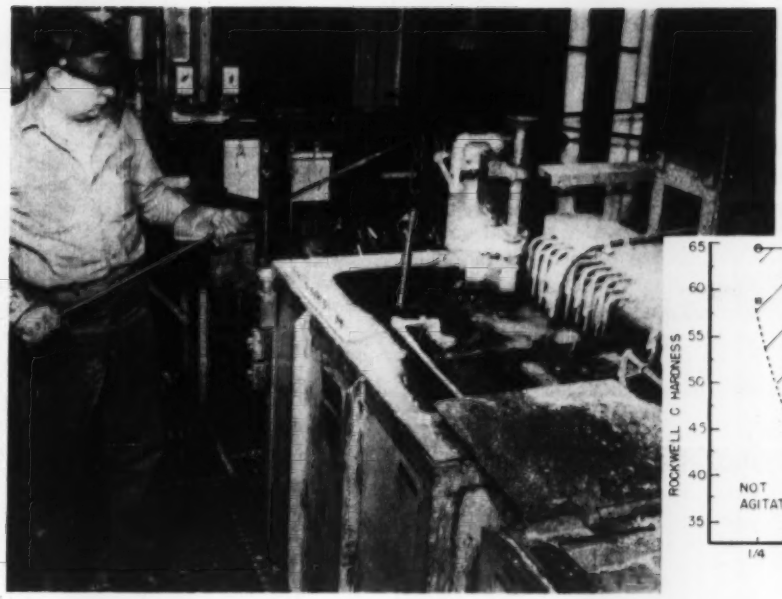
Two Pronged — Salt bath methods hit the distortion problem from the heating cycle and the cooling side as well. This brings us to one of the most modern aspects of heat treatment—isothermal or hot salt quenching. Distortion control is a big point here.

Isothermal process involves heating the metal to cause constituents to go into stable solution (austenitizing), then quenching at or above the critical rate in a salt bath at an elevated constant temperature, as indicated by the "S" curve for the type of steel being treated.

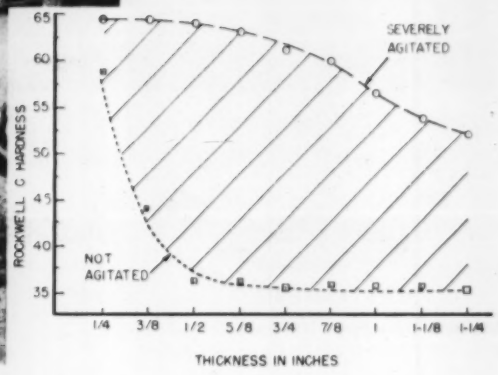
Types—Included are austempering, martempering, cyclic annealing and other treatments involving an interrupted quench. Effectiveness rests on a property of molten salt not widely recognized until fairly recently—its cooling power at temperatures above 350° F.

Primary advantages of isothermal schemes over conventional quench and temper methods are:

1. Minimum physical distortion



Agitated quenching salt at Brown & Sharpe Mfg. Co. Quenching is done in 12-inch diameter header agitated by means of a variable speed reducer. Curves (inset) show agitation effect on hardenability of 52100 steel



often allows machining to be done before heat treatment, while the parts are still soft. Result: Savings in grinding and finishing costs.

2. Proper selection of time-temperature cycles permits constituents, such as bainite and tempered martensite, to be retained in the structure in such a manner and degree as to combine toughness and hardness.

3. Parts have uniform hardness; work quenched in vigorously agitated salt often has more hardness.

4. Precise regulation of the control of transformation without setting up excessive internal stress which may cause cracking.

Straight Thinking — A hot salt quench is a heat exchanger and must be designed for heat extraction. It is not a draw furnace turned over to isothermal quenching. Forced air cooling around the pot wall should control the salt temperature within 5° F. Agitation of the salt, also, is an important factor in bringing out full power of the quench.

When austenitizing work in a neutral chloride bath, a film of salt carries over on the surface of parts. This is a source of contamination in the quench. The chlorides eventually will saturate the nitrate-nitrite salt and then be suspended as fine particles.

Removed — As the amount of chloride increases, quenching power is reduced; eventually, it is impossible to get satisfactory hardening. This problem is handled by using a separate chamber, which is an integral part of the isothermal quench. Operating principle of separation is based on the solubility of chloride salts in the nitrate-nitrite salt. The higher the operating temperature of the nitrate-nitrite salt, the greater the solubility of chlorides.

For example, if the quench chamber is at 500° F, the separating chamber is operated at 450° F, to cause a higher percentage of chloride to precipitate at the lower temperature. Chlorides are then manually removed from the bottom of the separating chamber with a sludging tool while the bath is in operation.

Fully Hardened—Now to some of the specific isothermal processes that are new talking points. Take martempering: Martensite is obtained under conditions of low thermal and transformational stress, due to the small temperature differential between the surface and the center.

Steel is austenitized, then held in salt bath at a temperature just above the martensite transformation range (400 to 600° F) long enough to equalize the temperature throughout the piece. Parts are then air-cooled to room temperature and tempered conventionally. Result is high hardness, equal to that from oil quenching, greatly reduced distortion and practically no cracks or internal stresses.

Pay Off—The big advantage in martempering is control of distortion. Final grinding of heat treated parts is expensive. The saving in even a moderate reduction of the finish grind can easily be greater than the heat treating cost.

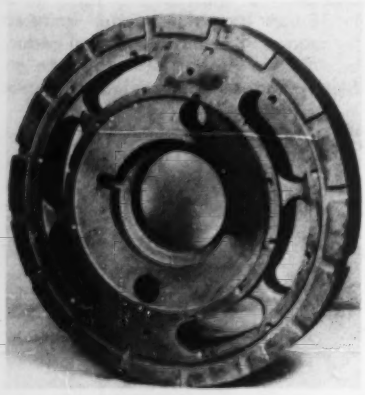
Ball bearing races are a popular application for martempering. SAE 52100 steel is generally used in sections 1 inch and over. In one plant, martempering replaced a conventional oil quench for bearing races, and grinding dropped from 50 minutes to 7 minutes.

Other applications: Many types of tools, gages and accurately finished parts where high stress or high hardness requirements must be met.

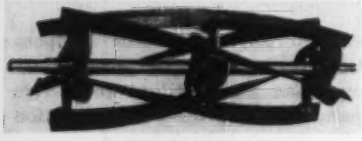
Military Slant—Problem was to use 4150 in place of 98V65 for armor piercing shot, to give equivalent hardness of Rc 60 at the tapered section of the nose and Rc 45 at the base.

Martempering solved it. Shot is austenitized at 1650° F, isothermal quenched at 400° F, air cooled, stress relieved, air cooled, base

VERSATILITY OF SALT BATHS



MARTEMPERING
High alloy valve plate (Vasco B.B. steel) martempered to Rc 60-64 without cracks



AUSTEMPERING
Lawnmower blades (SAE 1065) austempered for combination of Rc 48-52 plus high ductility

CYCLIC ANNEALING
Auto rear axle shaft (8650 steel) differentially cyclically annealed on the flange end and hardened on shaft end without disturbing the annealed flange structure

NEUTRAL HARDENING
Automotive spline shaft heat treated in large conveyorized neutral bath. Temperature held within 5°F

drawn, nose cooled, water rinsed and dried. Hardness and performance of the AP shot are the same. Strategic alloys are saved.

Set Up — Two hot salt quenching installations are used at Brown & Sharpe Mfg. Co. One is a three bath unit including: A carburizing salt at 1700° F, a neutral salt at 1550° and a quench salt at 400°. In treating 52100 steel, only the neutral and quenching salts are used.

The quenching salt is a ternary mixture of about 53 per cent potassium nitrate, 40 sodium nitrite and 7 sodium nitrate. A header type quench is used with a propeller speed up to 1750 rpm for agitation.

R. F. Harvey, chief metallurgist at Brown & Sharpe, says that agitation is such an important factor in bringing out full power of the quench that he uses an eccentric type hardenability specimen to check hardness versus salt velocity on steels such as 52100.

Treat Case—Martempering, when combined with carburizing, helps minimize distortion. In carburizing steel, it is necessary to consider the large difference which sometimes occurs in the Ms points of both carburized case and core.

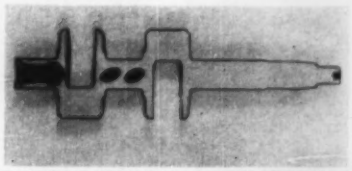
This becomes increasingly more significant with higher hardenability steels, which involve higher degrees of transformation stress. In selecting a martempering temperature, a compromise is made between the Ms point of the case and the core without jeopardizing the hardness of the case. Quenching temperature range is usually 400 to 500° F.

Gears — Sometimes, finishing costs may be shaved if parts are martempered directly from the carburizing bath. That's the way it's done at Jack & Heintz's Cleveland plant to the tune of 4800 countershaft gears in two 8-hour shifts.

Take a typical 4620 gear: After finish machining and grinding, it is immersed for 1 hour (150 gears in a batch) in a 50-kw Ajax carburizing bath at 1620° F. Case depth is 0.010 inch.

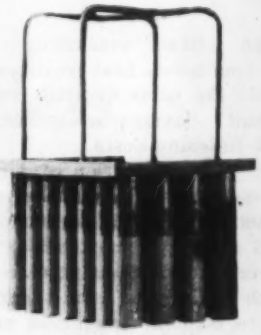
The gear is then stabilized for 5 minutes in a 50-kw neutral bath at 1500° F. This bath is rectified by bubbling methyl chloride gas

VERSATILITY OF SALT BATHS

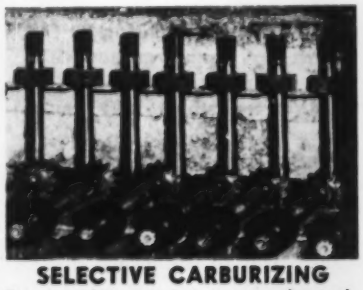


CARBURIZING-MARTEMPERING
Outboard motor crankshaft, drop forged from carburizing-type steel, carburized-martempered in automatic line

CARBURIZING-BRAZING
Jaw insert is assembled with wrench, racked and part simultaneously brazed and carburized



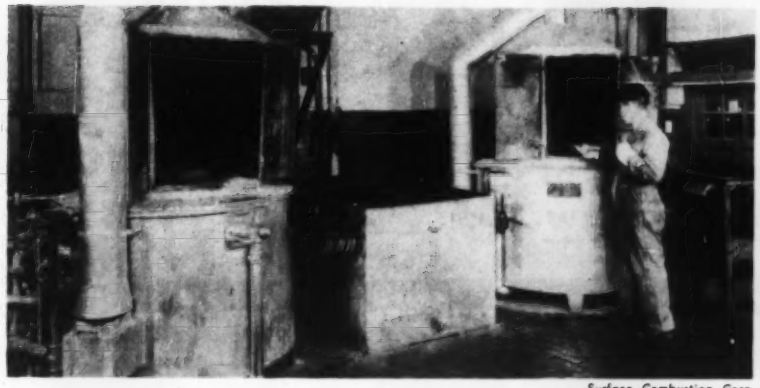
ANNEALING
Taper annealing of steel cartridge case takes 2 minutes for batch of 28 parts



SELECTIVE CARBURIZING
Tractor drive pinions are selectively carburized by immersing only the gear into carburizing bath

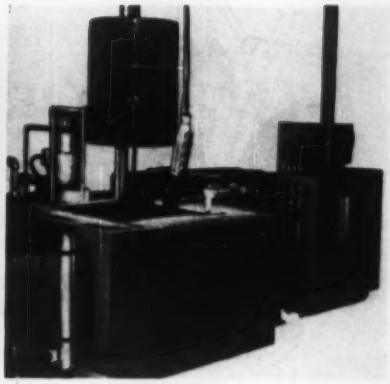
CYANIDING
A thin, file-hard case is produced on these screws by heating in a cyanide bath and quenching

Photos showing versatility supplied by Ajax Electric Co., Philadelphia



Surface Combustion Corp.

SAE 1030 auto parts are given a 0.005 to 0.10-inch case in these gas-fired circular pot furnaces



This Holden marquenching furnace is used in airplane plant

through the molten salt, to prevent decarburization and sludge.

Quench—Next comes the martempering step. The gear is quenched at 400° F for 3 minutes in a 60-kw salt bath furnace—just long enough to make sure that the load has reached the quench temperature. Parts are then air cooled below the Ms point. The isothermal quench minimizes distortion by allowing the martensite to form uniformly from surface to center. Finally, the gear is drawn for 1½ hours at 300° F.

Gears have a Rockwell A case of 80 to 83. The heat-treating foreman at J & H sums it up this way: No distortion, no decarb, no scaling and no grinding.

Isothermal heat treatment also may be combined with brazing, by quenching directly from the brazing temperature—saving the added cost of a reheating operation.

Gives Bainite—Now to a second isothermal process—austempering. The transformation of austenite is controlled to give bainite, a structure intermediate between martensite and pearlite. It has high strength, good ductility. Result is medium hardness, a combination of ductility and toughness and good distortion control.

Steels with carbon approaching the eutectoid range are austenitized and quenched in salt at 400 to 800° F. Carbon steels of the SAE 1000 series are generally used; alloys sometimes fit into the picture, too. Sections are generally fairly light, say ¼ inch or less. A frequent requirement is that the part can be bent without breaking after hardening.

Case In Point — A lawnmower manufacturer put in austempering and switched from alloy steel to SAE 1065 for his mower blades. Blades are heated in salt at 1550° F for 6 minutes to austenitize, quenched in a second bath at 475° F for 6 minutes, air cooled and washed. One man operates the entire line to turn out 550 blades per hour.

Required hardness of Rc 48 to 52 is obtained. The mower maker says: "Blades are tough enough to actually mow nails and ductile enough to be bent in the shape of a horseshoe without cracking."

Cast Iron—The cycle for austempering cast iron is similar to steel but temperatures may be different. Strength and ductility are increased.

A maker of cylinder linings wanted to go from a high alloy cast iron to a lower alloy (eliminate nickel and molybdenum and partially substitute copper for chromium) and still get hardness of Rc 45 to 55.

Austempering took over the job. Downgraded cast iron liners are preheated to 1400° F in hot salt, then heated to 1580° in a second bath, isothermal quenched at 400°, drawn at 425° in the fourth bath, air cooled and washed. The isothermal quench gives needed hardness even though hardenability of the alloy is lower.

Cyclic Annealing—This is another isothermal process. Work is heated in a salt bath to the austenitizing temperature (1500° F or higher) and then quenched in another bath at a lower temperature (1100 to 1300° F) in the pearlitic range. The part stays in the salt quench until transformation to the soft constituents is completed. Then it is removed and cooled.

The method is a practical way of annealing high carbon and alloy steel when time savings is important. Depending on the steel, time needed is from 30 minutes to a few hours. Conventional annealing may take 5 to 24 hours.

Isothermal treatment may also be applied to parts that are heated to the austenitizing temperature in atmosphere-type equipment. Work can be transferred by fixture or by dumping into isothermal quench.

Old Standby—In salt bath carburizing, two modern trends are in the picture: First is operation at higher temperatures to minimize the total time in the bath and to take advantage of rapid heat-up time characteristic of salt baths.

Second trend is toward catalyzed carburizing baths that are entirely free of calcium and barium compounds. This means that they can be washed from the work without difficulty after oil quenching. Some carburizing salt baths combine both washability and high temperature operation features.

Recent work has resulted in a combination of chemicals with a small amount of lithium carbonate, which gives a reasonably priced salt bath for heat treating titanium. Tests conducted up to 1700° F show no surface oxidation. There is no loss when weighed to 0.0001 of a gram on a 2-ounce specimen.

Streamlined Records Fatten Profits

Here's an expert who maintains all mill profits do not have to come from sales. There's a lot of profit-draining scrap in the average mill's records system

By J. T. O'CONNELL
Director
Records Analysis Service
Remington Rand Inc., New York

SPEAKING of being all involved in red tape, procedure for keeping files of office records can become quite involved, expensive and time-consuming. Studying the problem in many steel companies has revealed opportunities for reducing costs and, at the same time, vastly improving service.

When Acute—Records problems for many companies in the industry seem to become acute when they attain annual sales of $40,000,000 to $90,000,000 and when they begin to employ somewhere between 1000 and 2000 men.

Typical companies in this size bracket had these same problems: Lack of planning and system, frequently resulting in over-complication; absence of filing standards; no systematic disposal of out-dated material.

Record Growth—As an industry, steel's records problems have been cumulative rather than sudden. It expanded moderately and stably through the growth decade, adding one-third to one-half to both capacity and total workers between 1940 and 1950.

Since half again as much production equals at least half again as many papers, there were in that period quite enough papers to break down administrative machinery already clogged by 1 to 30 years' accumulation of records. Trouble began to occur in the Order, Purchasing, Accounting and Sales Departments, all demanding immediate attention in most companies surveyed.

Typical Cases — A mid-western steel wire and mesh manufacturer found that records in some departments could be simplified as much as 500 per cent, and a company-wide simplification of more than 350 per cent could be effected. Actually, 418 files and records had built up in the 16 departments which were surveyed.

Related papers were scattered and/or duplicated not only through different files, but through different departments. Twelve separate records were being kept in production, advertising and purchasing, as well as where they belonged. Employee history data were found in seven locations from the central file to the community relations department.

What Was Done—Records management beat that jungle back to a total of 121 records. Clerical hours saved by work reduction and executive hours saved by increased speed of reference represent a good many dollars saved per year.

Waste motion in record-keeping is another recurring ailment. One company receiving 80 orders per day, or upwards of 20,000 per year, was performing an average of 26 operations on each order shipped on a single billing. Another organization found that by rearranging its customer order file, they could eliminate four indexes then being kept up.

Filing Cost—In still another industry, a time study on 14 repre-

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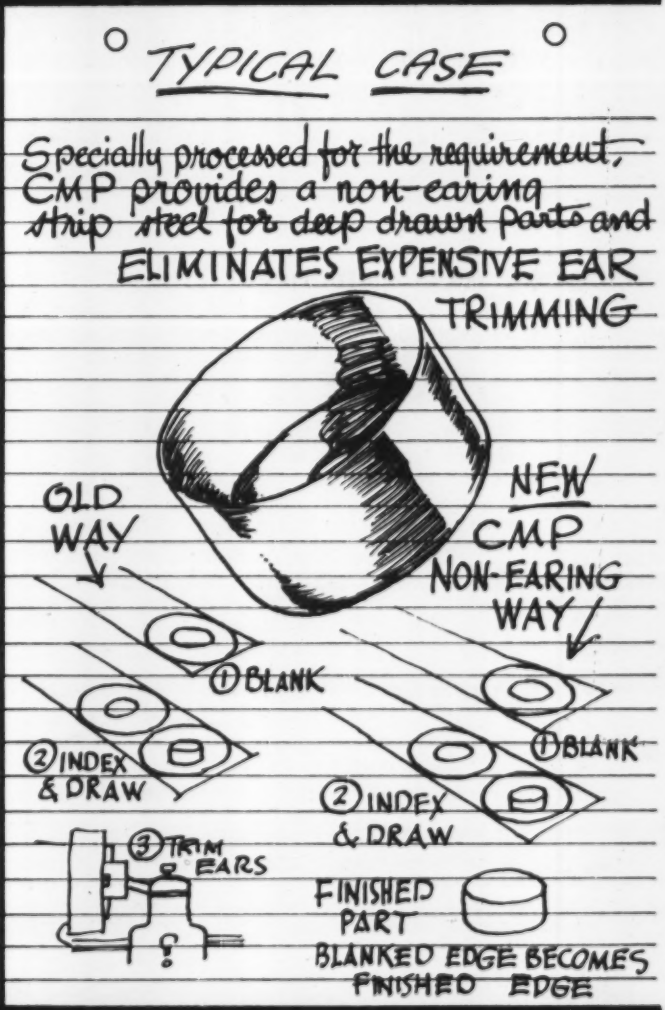
TYPICAL CASE
Specially processed for the requirement, CMP provides a non-earing strip steel for deep drawn parts and ELIMINATES EXPENSIVE EAR TRIMMING
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1 BLANK
2 INDEX & DRAW
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sentative pieces of material being filed, including cross-referencing, revealed that it took 4½ man hours to process them into a subject file grown over-complicated by some years of uncontrolled expansion. Calculating clerical wages conservatively at $1.00 per hour, it cost 32c per paper for filling into that system, contrasted with the 1c per paper generally accepted as the average file cost figure.

A small company passing the critical size of 1500 found their order department was filing 75,000 pieces a year, over one-third of which were found to be out and out duplication. This represented a waste of $5,000 dollars. They also found that about 600,000 pieces of obsolete material could be eliminated, releasing about 200 file drawers or another potential savings of about $5000 on equipment.

The point is that every administrative waste, great or small, becomes a drain on profit. The inability to find papers in the files, or slowness in finding them, costs expensive executive as well as clerical time and upkeep expense.

What To Do—If your company is out-growing your records system, here are things you can do to clear up the situation. First, appoint a records manager, then develop a definite plan for record management. After announcing the plan and executive support of it, train personnel to set up and operate the system and get the cooperation of all personnel in streamlining records.

Some firms hire consultant help. This has the advantage of getting the program moving fast and assuring complete installation. Other companies do the job themselves. The really important thing is to develop a sound plan of operation, then pick a person with a good grasp of company organization, equip him with a hat marked "Records Manager" and the president's blessing and put him to work.

Check up in six months and you'll be surprised at the savings, shortcuts and improvements in service made that didn't seem possible before.

RECORDS ILLS AND THEIR CURES

1. PLANNING. The most consistent weakness, observed in almost every company analyzed, was the lack of a well-conceived plan integrating all files of the organization into an orderly, simple and economical record structure.

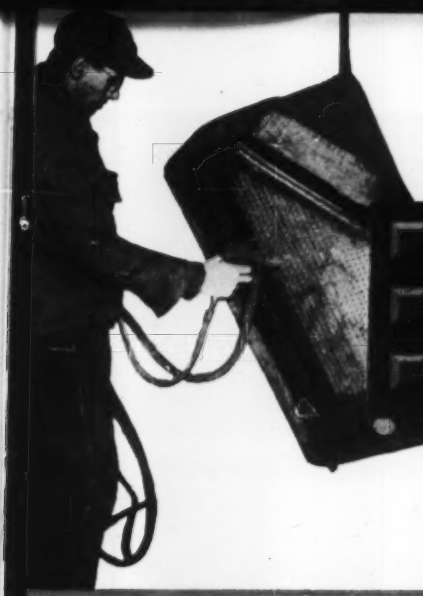
WHAT WAS THE MATTER	WHAT HAD TO BE DONE
No over-all supervision of files to keep records under control from creation to cremation.	Appointment of one person with responsibility and commensurate authority to control all company files, regardless of location.
No consistent arrangement or terminology used for files, so that each file is a more or less private and over-specialized device.	Development of standard systems of file arrangement and captioning for use throughout the company.
Too many separate files, so that related material is scattered and many duplicate copies are filed.	Logical combination of files to bring related material together and into convenient reference format.

2. TURNOVER. An equally prevalent weakness was the failure to systematically eliminate obsolete material so as to keep the records inventory down to manageable size.

WHAT WAS THE MATTER	WHAT HAD TO BE DONE
Records allowed to accumulate until lack of space and file cabinets forces destruction or storage.	Development of a schedule for systematic and periodic disposal of records of temporary value, and preservation and protection of permanent records.
More floor space for files constantly required; new filing equipment bought yearly; overcrowded drawers; overloaded folders.	Reclamation of space and filing equipment by orderly disposal of obsolete records.
Inactive and active material mixes, slowing filing and finding of current papers.	Arrangement of files so as to segregate active and inactive material and keep active folders down to a size that can be used conveniently.

3. METHODS. Another recurring weakness was the misuse of or failure to utilize the common tools of filing.

WHAT WAS THE MATTER	WHAT HAD TO BE DONE
Some folders so overcrowded as to be difficult to file or find in; others practically empty, wasting file space and supplies.	Subdivide bulky subjects logically so that folders contain the ¾" of papers they are designed to hold; use miscellaneous folders to accumulate material until its volume warrants a separate folder.
No or sporadic use of guides, so that finding requires looking at every individual folder label until the one wanted is come upon.	Guide all drawers uniformly and adequately—20 to 30 guides per drawer in active files.



SNYDER TANK CORPORATION REPORTS...

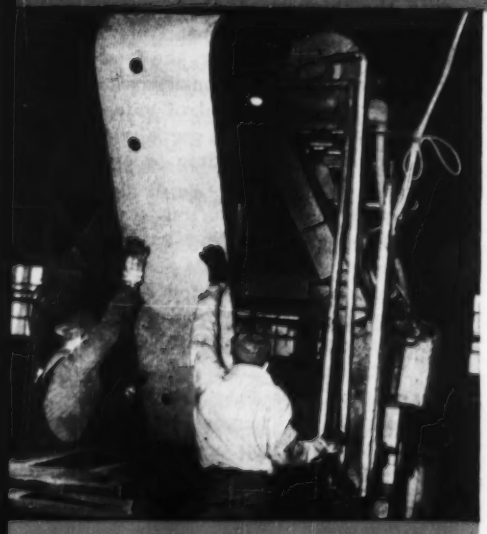
J&L Junior JAL-TREAD

Fabricates easily, economically
Provides neat, safe walking surface

Snyder Tank Corporation of Buffalo, New York, recognizes the importance of a safe footing for truck drivers when they climb into the cab or adjust the hitch. That's why, for almost ten years, the top surface of Snyder gasoline truck tanks has been made of non-slip J&L Junior Jal-tread floorplate.

Referring to the use of Junior Jal-tread on late model trucks where fuel tanks replace running boards, E. F. Olson, Sales Manager, says, "It is important to have a safe walking surface here also, because the driver must enter and leave the cab by stepping on the tank. From a customer point of view, the plate (J&L Junior Jal-tread) is neater looking too."

Regarding production costs Francis Snyder, Plant Superintendent, reports that he has less trouble fabricating J&L Junior Jal-tread than other types of steel. He adds that Jal-tread's straight line pattern of raised cleats cuts spoilage and makes fabricating, forming, punching and bending easier.



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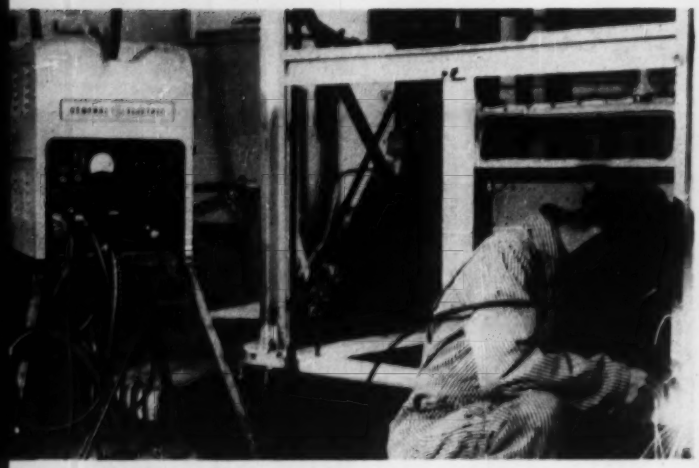
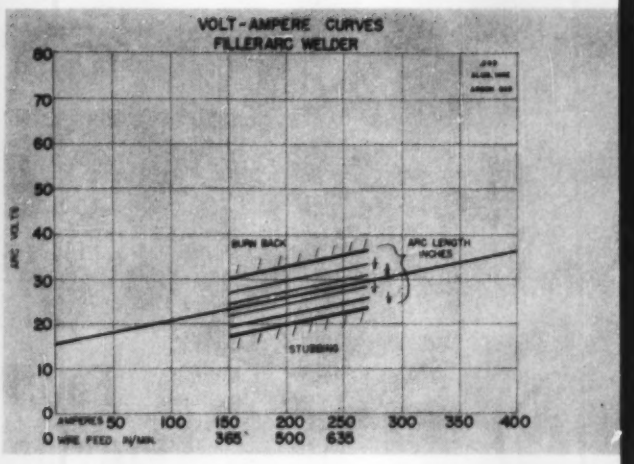


Aluminum truck cab is first tack welded, then butt and fillet joints are made. No special skill is needed



Basic difference between Fillerarc welder and conventional machine is shown in these volt-ampere curves

Pushbutton Welding . . . A Step Closer

New developments in consumable electrode gas shielded welding step up welding speeds while decreasing need for operator skill. New current control concept clears the way

By R. W. TUTHILL
Welding Process Engineering
General Electric Co.
York, Pa.

WITHIN the last few years a new welding process has been developed which promises to increase the scope of fusion welding, lower welding costs and reduce the requirements for welding skill.

Known by many different trade names*, the process is essentially a means of utilizing a continuous-feeding bare electrode wire in a gas-shielded arc. Current density is several times greater than conventional welding, making it necessary to use small diameter electrodes (as small as 0.020 inch) to keep the actual welding current down. Under these conditions, electrode consumption is very high, usually several hundred inches per minute.

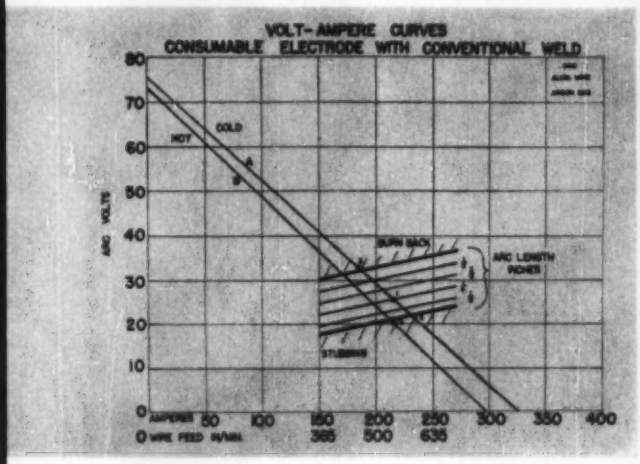
Vital Components — Under the above operating conditions, it is necessary that the operator have a device for feeding wire into the arc and that current be introduced into the electrode as close as possible to the arc. Further, the high currents usually require water cooling of the torch.

Unlike other systems, where a wire drive mechanism *pushes* wire through the gun and into the arc, the design described here provides for *pulling* of the wire by means of knurled feed rolls within the gun itself. Less wire slippage is encountered, and this technique permits trouble-free application of even the thinnest electrode wires.

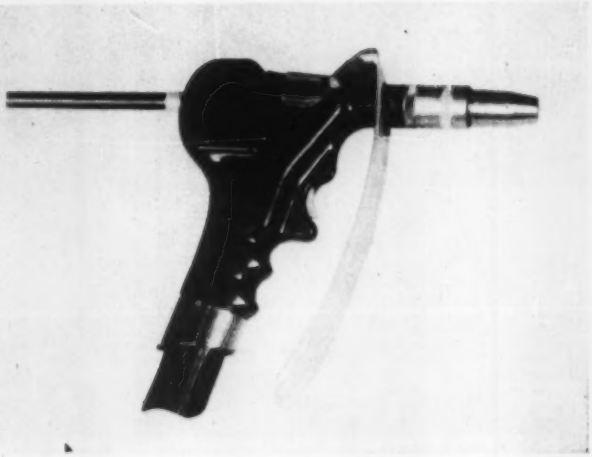
Driven by flexible shaft from a remotely mounted motor, the feeding knurls are synchronized with the gas and water control valves so that one push of the gun's trigger initiates all welding operations.

Current Control—In this welding process the feeding rate of the electrode must be the same as the consumption rate for stable welding conditions. For a specific size electrode the consumption rate is controlled by current which means that wire feed speed predetermines the current requirements. The setting on the welding generator, therefore, *does not* adjust current.

*General Electric calls their process Fillerarc.



By making generator with an adjustable rising output curve instead of drooping one, arc curve is matched



Trigger-controlled gun has knurled-wheel electrode puller driven through flexible shaft by external motor

Instead, the setting on the welder changes the output voltage of the generator at the current required by the feeding rate. Since the voltage controls the arc length it means that arc length is actually accomplished by adjusting the generator, current control by selection of wire feeding speed.

These principles are radically different from metal arc welding since standard machines are calibrated in current, and adjustment of the welder changes arc length in this new method.

Rising Output — By making a welding generator with an adjustable rising output curve instead of a drooping one (see arc curves) it is possible to match the arc curve. Dial of this welder is marked in arc length, not current, since it has been determined that for this new method of welding, current cannot be controlled by adjusting the welder. Dial controls the position of the curve, the slope being selected to match the wire being used (by means of a tapswitch).

With this type of control, operators can be trained very quickly. Control of arc length and wire feed speed (current) are independent of each other. Machine is not affected by heating nor by line voltage fluctuations as are some standard welders. In short, it is a machine designed specifically for this method of welding and is not suitable for metal arc or tungsten inert arc welding.

Application Example—The Kenworth Truck Corp., Seattle, had a typical problem. How to reduce welding time and cost in fabricating aluminum truck bodies. With the tungsten inert arc process good results were obtained, but welding was slow.

Fillerarc equipment has permitted the joining of truck bodies at speeds up to ten times the former rate. Not only are welding speeds faster, but it is unnecessary to clean the aluminum to the degree that was needed before tungsten arc welding. Typical joint is the butt welding of 0.062 aluminum with 0.030 43S aluminum wire. Wire feed was 400 ipm, travel speeds about 35 ipm and argon gas flow 45 cfm. Another joint was a fillet on $\frac{3}{8}$-inch-thick aluminum welded with 0.040 43S wire. Feed, travel and gas rates are 400 fpm, 15 fpm and 50 cfm respectively.

Fuel Tank Too — Dished heads for the fuel tanks are $\frac{1}{8}$-inch aluminum, and the sheet which forms the main part of the tank is 0.062 inch thick. These are butt welded together. The diameter of the tank is about 22 inches and a circumferential weld requires 1 minute 15 seconds.

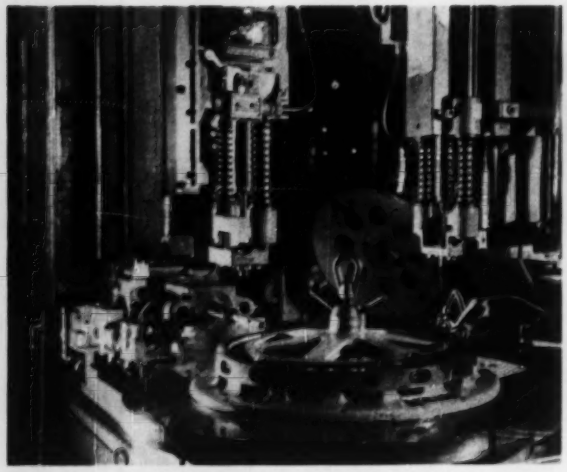
One problem Kenworth faces on this operation is the need for controlling the precise amount of drop-through or sag on the back side of the bead. That ceases to be a problem with the Fillerarc process.

Basic Concepts—The principles of welding by this new method are radically new and sometimes not completely understood even by those using it. Better understanding of the process is a must, lest the future of the process be jeopardized.

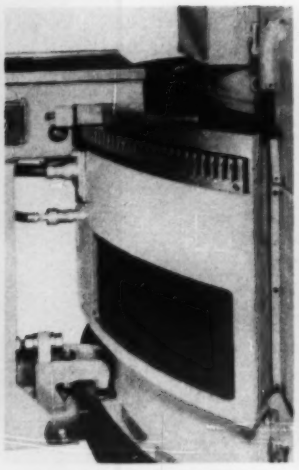
Of even more importance is the recognition that a new concept of current arc length control is needed. This is necessary in order to recognize the limitations of the present standard generating equipment made for older, very different welding processes. Use of such equipment is holding up expansion by reducing effectiveness of the process.

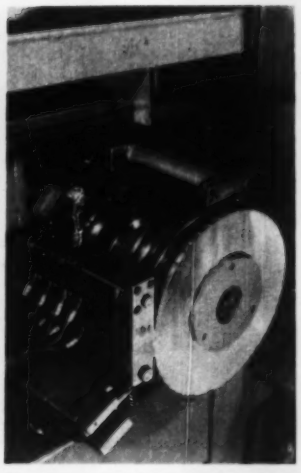
Future Prospects — Application of this process on mild steel, rimmed or semi-killed variety, is being watched very closely and will expand. But wide application will come only if the costs of welding are lowered. This will be possible as newer techniques are developed to use mixtures of expensive inert gases with gases which are not inert, or the use of these other gases alone.

Welds can be made with gases which are not inert, and beads are sound and have low spatter loss. This method some day may be the basic fusion welding process.



Closeup of the tooling area shows fixture which holds stainless jet engine ring. Part, mounted in fixture, is indexed past spindles. The cycle is automatic





These views show the gear around the base (left) which facilitates radial positioning of knees, and the cycle-control drum (right) with its cams and microswitches

Single Purpose Machines

Change with the Job

Automatic machines bearing a "single-purpose" tag, often have versatility built in. These can be reset in jig time—take the dollar bulge from conversions

JET ENGINE production calls for special machines in large numbers. Many of these machines must be single purpose, simply because of the unique nature of the jet components.

Despite limiting requirements placed on the machines, many are built with an adaptability to change in part design and even to change in the job being done.

Versatility in Reserve — When Ford Aircraft Division, Chicago, entered a new phase of jet engine manufacture, one of the machining jobs entailed drilling a series of holes in the rim of stainless steel rings. Due to design changes, the number of holes and their location on the part may vary from time to time.

Thus the equipment, which must be automatic to meet production demands and design tolerances, must also be flexible enough to allow for part modifications.

Assemblies—Machines now used at Ford are built up from standard components. Bases, knees, columns and heads are assembled to drill the specified holes, but the assembly can be varied.

Bases of the machines are circular and support index tables on which the part fixtures are located. Knees are mounted around the diameter of the base. Knee may be located in any radial position within an arc of 240 degrees, centerline to centerline.

Knees have lips at the top hooking over the top ledge of the base and bearing against the outside of the base at the bottom. Flat ways on top of the knees permit mounting adapters for horizontal and angular drill units, or columns for vertical drill units.

Angular adjustment of the knees around the base is accomplished by a large gear mounted on the base with a worm on each knee.

Cam Control—Cycle of the machine is controlled from a cam assembly. Cams, which can be changed, rotate and contact microswitches and solenoids mounted on brackets around the cams. These control the cycling of the heads and the index of the table.

Cams are driven by a shaft which is rotated as the index table (dial) revolves.

Back Index—As the drill units complete their cycles, the table drive motor indexes the table to

the next station as indicated on the cam drum. The cam notch passes a spring-loaded latch, reversing the index motor. This brings the table back against a positive stop and a magnetic brake is set.

Final rotation of the motor is absorbed by the over-running clutch which slips in reverse.

The Switch—When a new job or new design comes along, the machines built by Hartford Special Machinery Co., Hartford, Conn., can be changed by adjusting the position of the heads around the base, by adjusting the air-hydraulic feed of the heads and by changing the cams and thus the index and the head cycling.

In addition, other standard knees and heads can be added. These may be for additional drilling, or they may tap or ream. Ford engineers expect this versatility to pay off in less than two years.

Broach Runs On Automatic

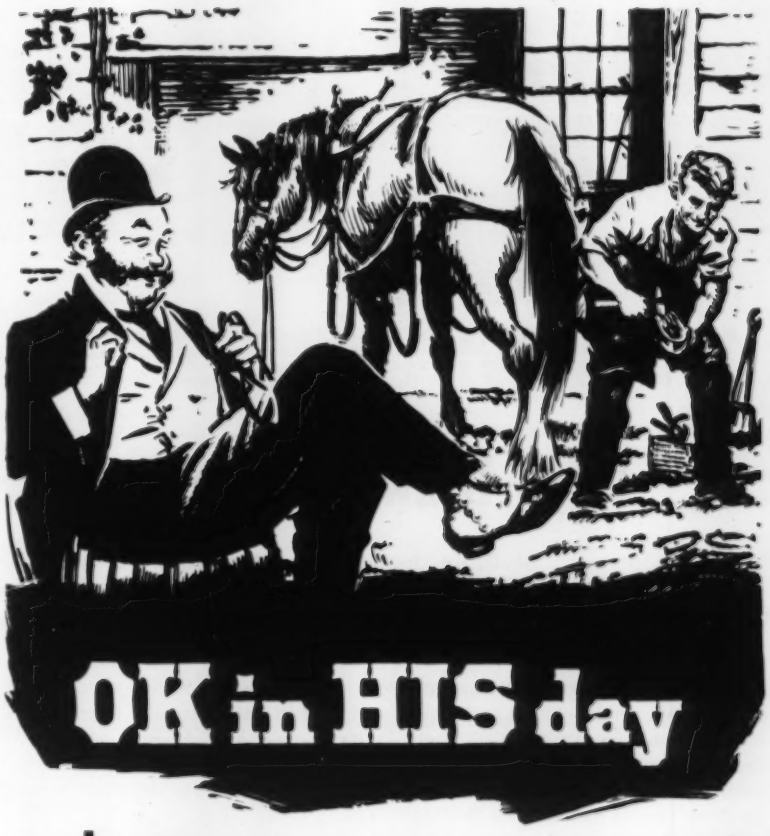
DESIGNED to fit into a conveyor line, a vertical, hydraulic, 3-way broaching machine features an automatic loading and ejection mechanism that makes it possible to run the machine on continuous automatic cycle. Production is over 200 parts per hour.

How It Works—American Broach and Machine Co. has designed the machine so parts coming in on the conveyor line are shuttled into broaching position by a hydraulic cylinder interlocked to the machine cycle. A broach retriever lowers the broach shank or arbor through the part, finishing the inside laminated surfaces of the stator.

With the broach in down position, free of the part, a second hydraulic cylinder ejects the part out of broaching position onto the conveyor line. The broach is then returned to the retriever which raises it to starting position.

Repeat — The cycle automatically repeats as long as parts are fed to the machine. Tooling includes various sized broach shells for broaching similar stator parts. They adapt to a common broach arbor.

The broach retriever is mounted on its own ways, separate from the machine slide.



but . . .

TODAY'S PRODUCTION SCHEDULES *WON'T WAIT*

Back in the unhurried, uncomplicated days of the village blacksmith, forging jobs were delivered on a ". . . soon's I can get to it" basis . . . and that was good enough. But today's production schedules depend on the prompt availability and the dependability of every component.

Set up to produce and deliver forgings to tie in smoothly with your production schedules, Consolidated offers complete, modern facilities including a new die shop fully equipped with the latest die sinking machines. Here too is the experience and know-how it takes to supply forgings (in aluminum, titanium, alloy steel and many other metals) that meet today's exacting standards for strength, uniform high quality and economy.

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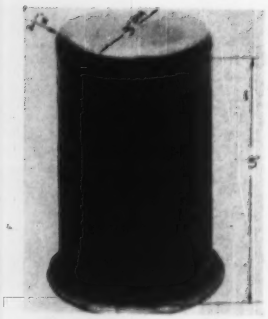
West Coast Representative:
A. C. Stearns Co., 3911 San Fernando Road, Glendale, Calif.



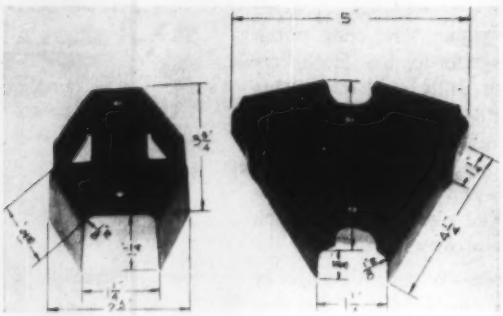


Fig. 1—Cylinder 3 inches in diameter, 5 inches deep; corner radius is ¼ inch. It's hot drawn from 0.025 gage. Fig. 2 at right shows rubber-formed parts, both A-70 and 0.040 gage

Deep Draw Titanium in One Operation

Multiple draws with intermediate anneals are unnecessary to achieve deep drawn parts. While maximum depth is unknown, one 5-inch draw was finished without difficulty

TITANIUM users generally assume deep-drawn parts can be achieved only by multiple draws with intermediate anneals. While this has been the case in the past, Brooks & Perkins Inc. is responsible for development work that establishes feasibility of deep drawing in one operation. Result should be new possibilities for design and use of the metal.

The company, a large producer of deep-drawn magnesium parts, applied the theory that titanium's structural similarity to magnesium should make techniques for deep drawing and forming the two metals essentially identical. They backed their theory with considerable research effort.

How Deep? — A cylinder hot drawn in one operation from 0.025-inch gage A-55 is seen in Fig. 1. The cylinder is 3 inches in diameter, 5 inches deep; corner radius is ¼-inch. Results on this job indicate that in some instances titanium may be easier to hot draw than magnesium.

Various parts made of A-70 in single-operation draws are shown in Fig. 3. Radius at juncture of side with bottom can be ¼ or even 3/16-inch. On box draws radius at side corners usually is 7/16 to ½-inch.

Titanium, like magnesium, requires heating for optimum results with the Guerin process. The developed blank and the hydro-form die are both heated. Titanium parts are formed without difficulty, using same techniques as for forming magnesium alloy parts (Fig. 2).

Evaluating Depth—Important to remember in evaluating depth of draws and radii possible, is the fact that parts illustrated here were drawn without difficulty on the first attempts. Had dies been made for greater depth and sharper radii, more severe draws could have been made.

Apparently anything that can be drawn in magnesium in one operation can be drawn in A-55 and A-70.

Based on a report by Ralph G. Gillespie, Brooks & Perkins Inc., Detroit, prepared for the Rem-Cru Titanium *Review*.

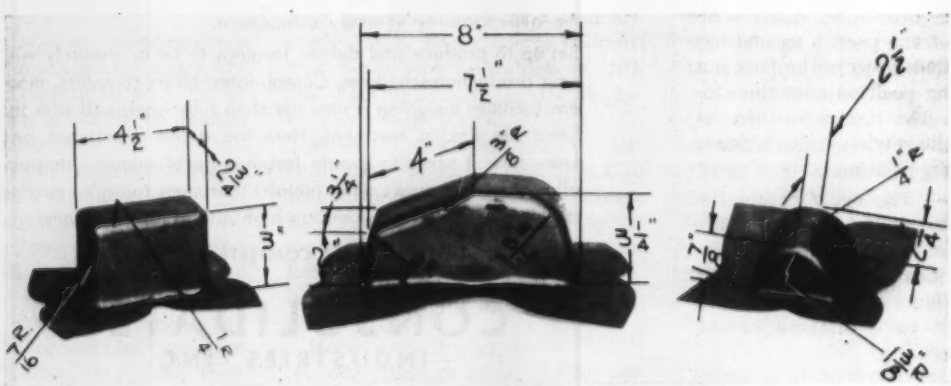


Fig. 3—Various parts made of A-70. Part at left is 0.062 gage, in center 0.040 and at the right is 0.035 gage

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Once more, Lamson offers a service to help you in purchasing bolts & nuts.

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Semi-finished, hot pressed, cold punched.

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Economical, vibration proof. Can be used repeatedly.

COTTER PINS
Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

Tool Switch Quadruples Output

PRODUCTION OF SAE 1020 forged steel liner rings at the plant of a prominent equipment producer has been increased from 200 to 800 pieces a shift by utilizing tungsten carbide tooling.

Both sides of the workpiece are machined by double-indexing their 60-hp, 8-spindle New Britain automatics and reversing the part in the chuck.

Work Data—Operations handled are multiple turning of both the outside and inside diameters, in addition to facing and chamfering of the parts. Work is machined at a feed of 0.006 inch per revolution, speed of 535 revolutions per minute at 570 maximum surface feet per minute.

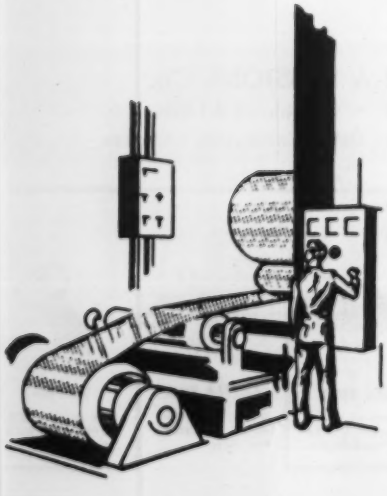
Depth of cut varies between $\frac{1}{8}$ and $\frac{5}{8}$ inch on roughing and 0.030 and 0.050 inch on finishing. Heretofore these operations were performed with standard tipped carbide tooling which required excessive downtime for tool changes.

Savings — Tool cost for both rough and finish turning the part's outside diameter was reduced 59 per cent. Tools performing other operations on the job effected similar savings.

With standard square and triangular inserts of grade K3H Kennametal, a new cutting point is obtained simply by loosening the socket-head screw and rotating the tip to a new cutting edge.

Switch — By interchanging inserts of the same size even greater economies are effected. For example, one holder for an SD-12 insert has a 6-degree side rake. When its four cutting edges have been expended, the normal 12-degree side relief is decreased by grinding it to 6 degrees. Then the insert is used in a holder with no side rake for finish turning.

Rolls Cut Mill Maintenance



STEEL MILL ROLLS up to 42 inches long and made of carbide have been produced and are giving good service life. They're being used on all kinds of strip steel, including both low and high carbon and stainless.

One large stainless steel strip producer is rolling strip without roll changes for three or four turns. Previously it was necessary to change the work rolls several times a turn.

Better Plating — Carbide rolls impart an exceptionally smooth, flat surface to the strip rolled which improves plating operations. Platers report that only $\frac{1}{3}$ to $\frac{1}{2}$ the normal amount of tin, copper, nickel, cadmium or other plating material is required to plate, due to the improved surface.

Versatile—According to Metal Carbides Corp., Youngstown, O., carbide roll producer, these rolls can be used with equal success for both breaking down work and finishing operations.

Company's customers report that a distinct mechanical advantage is derived from the use of carbide rolls. Load on both the back-up roll bearings and the housings of the mill is reduced because the carbide roll does not flatten under pressure to the same extent that steel rolls do. Maintenance is reduced accordingly.

CALENDAR
OF MEETINGS

August 30-September 3, Automotive Electric Association: Annual fall meeting, Vanss Springs hotel, Vanss Springs, Alberta, Canada. Association address: 802 Michigan Bldg., Detroit. Executive secretary: S. W. Potter.

September 1-16, International Electrotechnical Commission: Golden jubilee meeting, University of Pennsylvania, Philadelphia. Information: D. E. Denton, Public Relations Dept., American Standards Association, 70 E. 45th St., New York 17.

September 4-8, Pressed Metal Institute: Annual fall meeting, Manoir Richelieu hotel, Murray Bay, P.Q., Canada. Institute address: 2860 E. 130th St., Cleveland. Managing director: O. B. Werntz.

September 7-9, Industrial Truck Association: Fall meeting, Greenbrier hotel, White Sulphur Springs, W. Va. Association address: Washington Loan & Trust Bldg., Washington 4. Secretary: William Van C. Brandt.

September 7-9, National Fluid Power Association: Fall meeting, Hotel Commodore, New York. Association address: 1618 Orrington Ave., Evanston, Ill. Secretary: Barrett Rogers.

September 8-10, American Society of Mechanical Engineers: Fall meeting, Schroeder hotel, Milwaukee, Wis. Society address: 29 W. 39th St., New York. Secretary: C. E. Davies.

September 8-10, Porcelain Enamel Institute Inc.: Shop practice forum meeting, Urbana-Lincoln hotel, Urbana, Ill. Institute address: 1346 Connnecticut Ave. N.W., Washington 6. Secretary: John C. Oliver.

September 8-10, National Bureau of Standards: Conference on cryogenic engineering, NBS-AEC cryogenic engineering laboratory, Boulder, Colo. Information: M. M. Reynolds, chairman of the conference, NBS Boulder Laboratories, Boulder, Colo.

September 10-11, Metal Powder Association: Fall closed meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 11-14, Packaging Machinery Manufacturers Institute: Annual meeting, Grove Park Inn, Asheville, N. C. Institute address: 342 Madison Ave., New York 17. Secretary: Miss Helen L. Stratton.

September 12-15, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y. Association address: 122 S. Michigan Ave., Chicago 3. Secretary: Charles L. Blatchford.

September 12-17, American Chemical Society: Fall meeting, Statler hotel, New York. Society address: 1155—16th St. N. W., Washington 6. Executive secretary: Alden H. Emery.

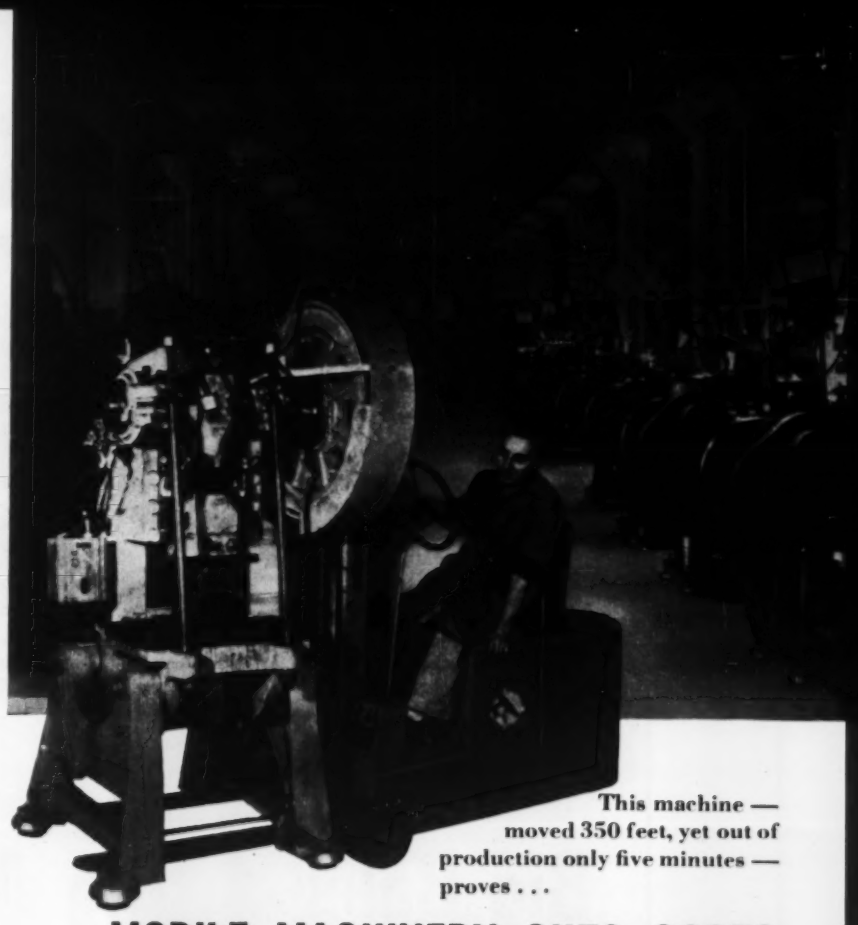
September 13-14, American Coke & Coal Chemicals Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 711—14th St. N.W., Washington 5. President: Samuel Weiss.

September 13-15, Allied Railway Supply Association: Annual meeting and exhibit, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: C. F. Weil.

September 13-16, Society of Automotive Engineers Inc.: National tractor meeting and production forum, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 13-24, Instrument Society of America: First international instrument congress and exposition: Commercial Museum and Auditorium, Philadelphia. Information: First International Instrument Congress and Exposition, 921 Ridge Ave., Pittsburgh 12. Managing Director: Richard Rimbach.

September 16-17, American Hot Dip Galvanizers Association Inc.: Semi-annual meeting, Hotel Dennis, Atlantic City, N. J. Association address: 1506 First National Bank Bldg., Pittsburgh 22. Secretary-treasurer: Stuart J. Swensson.



This machine — moved 350 feet, yet out of production only five minutes — proves . . .

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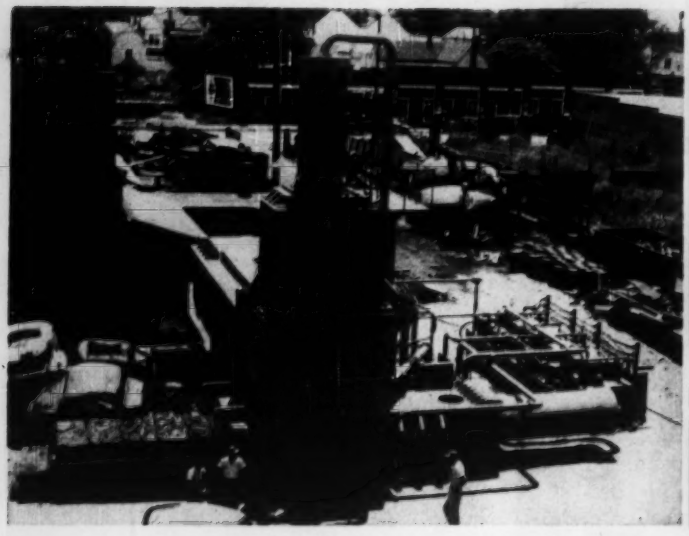


Set up in the Harris yard, the baler press dwarfs the men testing it. Note size of hydraulic system. At left, two cars can be loaded into charging bin at the same time. Two minutes later, they're 3000-pound scrap cakes

Big Baler . . Big Appetite

This monster machine turns complete automobiles into neat, 3000-pound cakes of scrap in less than two minutes. The charging box is as big as the average garage

A look into the charging box gives a good idea of size of entire machine

SEVEN railroad flatcars, carrying perhaps the biggest scrap baling press ever constructed, are rolling northward out of the shops of Harris Foundry & Machine Co., Cordele, Ga. The $300,000 machine will soon be at work at General Iron & Metal Co., Chicago.

Designed to bale complete automobiles, light trucks and busses, the 675,000-pound giant has a charging box 240 x 80 x 72 inches —big enough to gulp two autos at once—axles, engine and all.

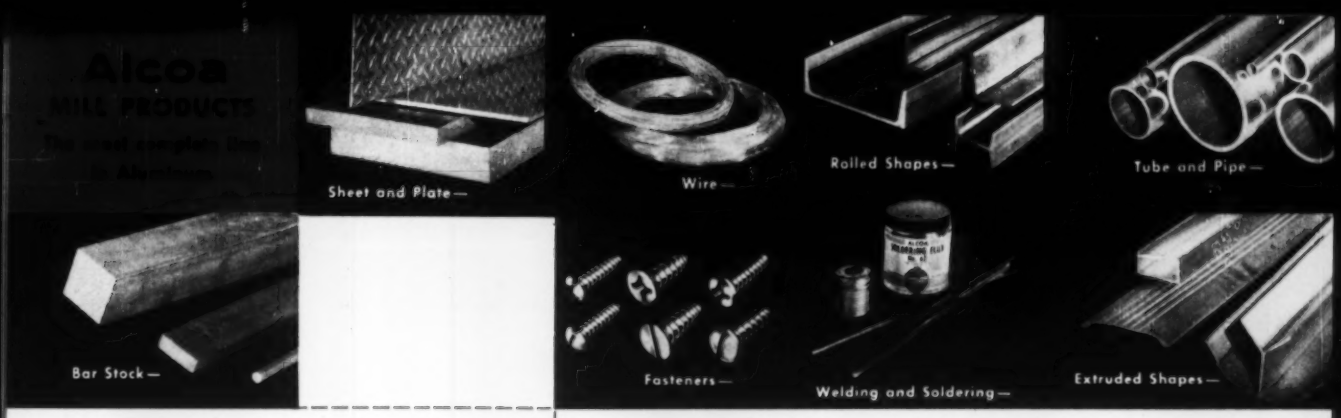
Tests Impressive—Prior to shipment, Harris gave their new giant a trial run. Baling cycle was timed at an average of one minute and 45 seconds from charging to ejection of the bale.

Bale dimensions are 24 x 60 inches constant, by an average of 34 inches, depending on the material being scrapped.

Average bales weigh 3000 pounds, giving an average production rate of 60 tons per hour.

Some Details—The hydraulically-operated press is operated by five 100-hp electric motors, specially wound to provide a surge of 800 hp, if necessary. Its 10 pumps oparate at 60 gpm each at a pressure of 2000 psi.

The tramper and longitudinal cylinders are both 36 inches in diameter, and each exerts a compression of 1018 tons. Power unit oil capacity is 2500 gallons, and the entire system holds 3700 gallons.



While you buy screw machine stock by the pound, you machine it by the foot. Because a pound of aluminum gives you three times more feet of stock than a pound of brass, you get more material for your money.

You can get high production rates, too. Surface speeds are frequently higher than those used for most other metals; 1000 feet per minute is common and the figure runs even higher with carbide tools.

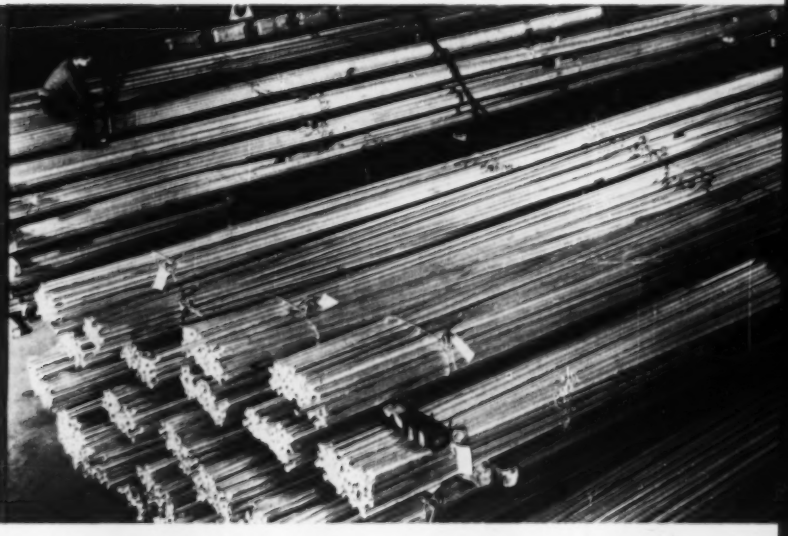
Although aluminum needs no special finishing for good appearance, it takes any finish. You can polish, buff, brush or burnish it. You can use anodic treatments for extra corrosion resistance and for a wide range of colors. Or you can electroplate with other metals to match companion parts.

Alcoa, pioneer in aluminum, has developed four screw machine alloys, each outstanding. Alcoa 11S-T3 is the general-purpose, free-machining alloy. Stronger Alcoa 17S-T4 is best for deep hole drilling. Alcoa 24S-T4, even stronger than 17S-T4, is used for aircraft and other high-strength applications. Alcoa 61S-T6 provides high corrosion resistance and is best for anodic treatments. Your local Alcoa sales office can draw on the world's greatest fund of aluminum knowledge to advise you on alloy selection and production techniques.

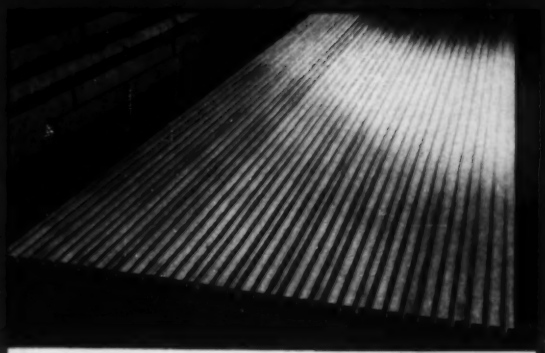
Alcoa

Screw Machine Stock

Combines low cost with ease of machining; takes any finish.



Products of Sixty-Five Years of Pioneering in Aluminum



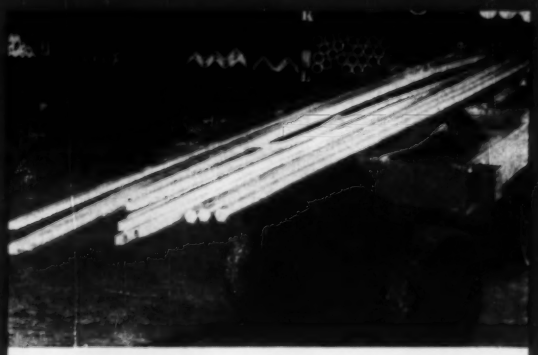
EXTRUDED SHAPES: For thresholds; window sills; door frames; glass stops; copings; gravel stops; trim; truck bodies. Also angles; channels; tees; zees; etc., for structures.

TUBE AND PIPE: Coiled tube; Alcoa® Utilitube; straight tube in round, square and rectangular shapes; heat exchanger tubes; standard pipe and pipe fittings; construction pipe; rigid conduit.

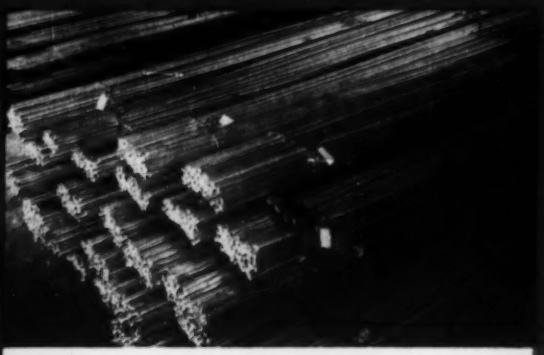
WIRE: Coiled and straight length; flattened wire; rivet wire and rod for die heading operations in manufacture of rivets, nails, bolts and screws.

ROLLED SHAPES: Equal angles; unequal angles; channels; I-beams; tees; zees. Suited to a variety of structural applications.

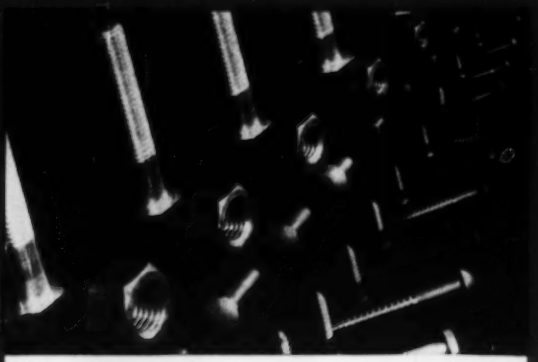
SHEET AND PLATE: Flat and coiled sheet; circles; patterned sheet; plate; tread plate; roofing and siding sheet; roofing accessories and fasteners; specialty sheet.



BAR STOCK: Square, hexagonal and rectangular in all commercial alloys. Rolled and cold finished to final dimensions for superior tolerance and finish.



SCREW MACHINE STOCK: Available in 11S-T3, the free-machining alloy and 17S-T4, a higher strength alloy plus 24S, 61S and 75S.



FASTENERS: Machine screws, wood screws; washers; nuts; bolts; rivets. Recommended for fastening aluminum to prevent electrolytic damage.

WELDING AND SOLDERING: Welding and brazing wire; welding and brazing flux; solder flux; solder.

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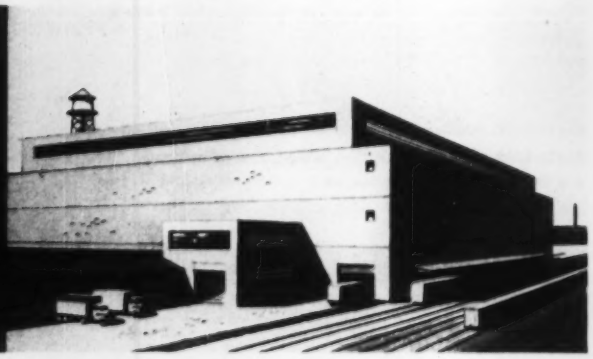

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ALCOA ALUMINUM

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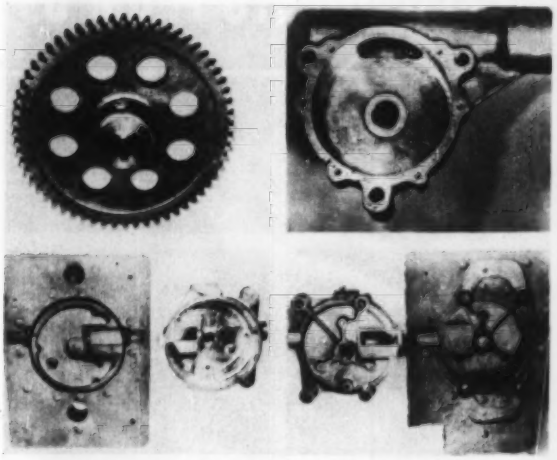
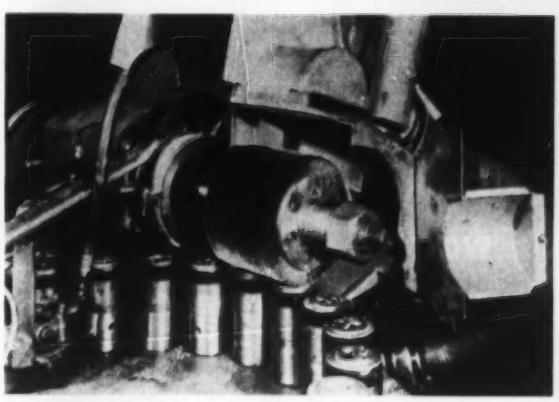
SHELL MOLDING



Top left to right, top and bottom halves of mold. Left to right bottom, top plate, gear case, worm gear casted

LIGHTWEIGHT and economical shell molds, bonded by Bakelite Co.'s phenolic resins, are used to cast aluminum working parts of a counter machine. Close tolerances make for less machine finishing. Castings gain in density and ductility and have greater strength, according to the manufacturer. A high percentage of sound castings is due to freedom from metal shrinkage and extreme porosity of the thin sand layer bonded in the shape of the mold by the resins. Porosity also permits gases to escape, eliminating blowholes and other surface imperfections. Formerly requiring facing, boring, reaming, tapping and drilling, the bowl now needs only drilling of ten small holes and reaming of three bores. Bowl is cast with thin wall sections and bottom halves of shell mold. Costs are reduced about 20 per cent.

POWER BRUSHING

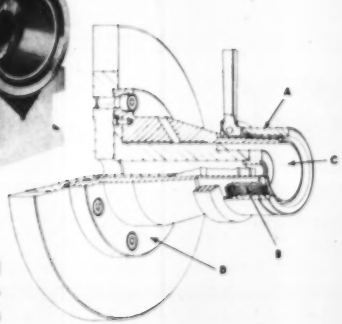


Feather burrs are removed and surface junctures are blended on fuse components by power brushing method

A BOTTLENECK is being eliminated by a unique power brushing method that finishes 15,000 fuse components per 7-hour day to meet an Army contract requirement. The problem of removing feather burrs and blending surface junctures after fuse discs are machined was solved by power brushes made by Osborne Mfg. Co. A Parker automatic machine is equipped with 24 rotating spindles, rotating at approximately 60 rpm and completing one revolution every 25 seconds. Spindles do not rotate at loading station. Air jet lifts finished part and blows it into a chute. Brush head is driven by a 7½-hp motor with vari-drive operating at about 3600 rpm on the spindle. Direction of the brushes is reversed every 2½ hours by a manual reversing switch.

CHUCKING

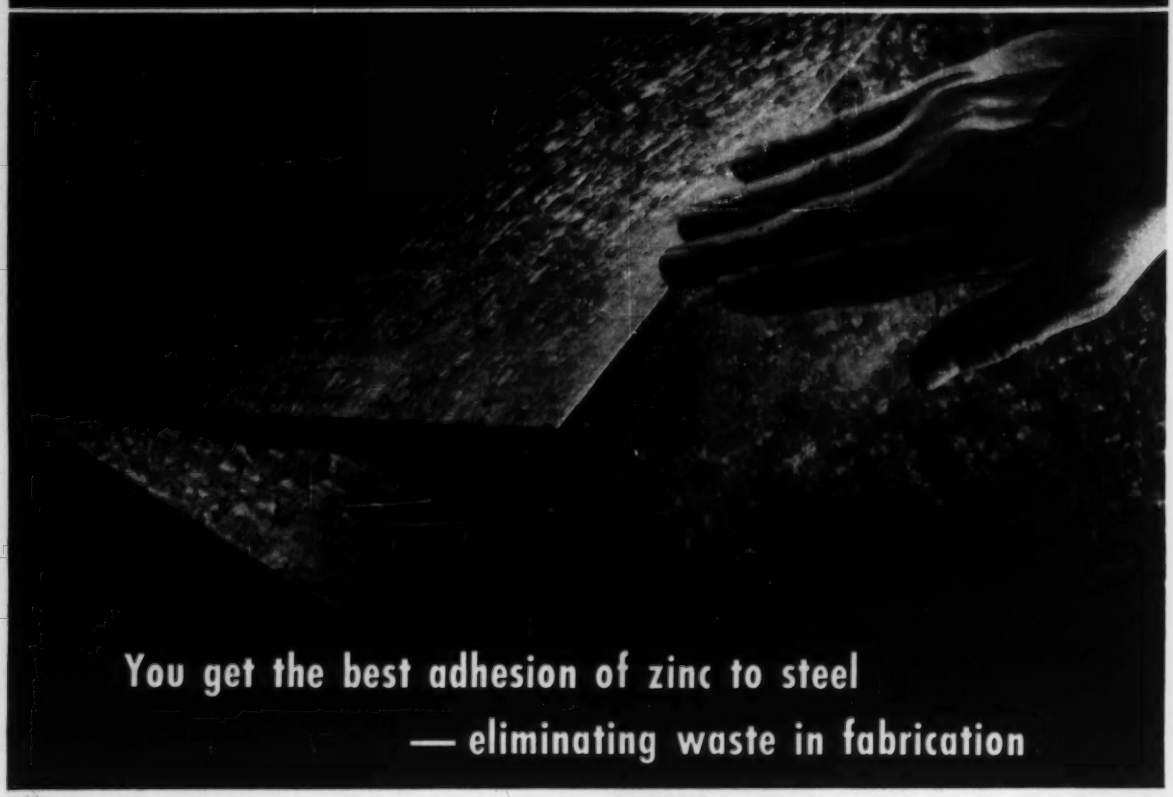
Special chucking fixture is adaptable to all vertical and horizontal hobbing machines



Rollers are mounted at slight spiral angle between two tapers

A HOBBING FIXTURE designed by Scully-Jones & Co. is claimed to have increased production and accuracy by providing a more powerful, faster method of chucking tractor drive pinions. It utilizes the elasticity of metals to compress a solid inner shell evenly and powerfully around hub of pinion, centering it precisely for hobbing. Compressing with equal force all around the chucking surface, it eliminates runout. Pitch-line concentricity of cut gear is more accurate. Loading and unloading of pinions are simple and fast. Operator merely twists actuating ring a few turns to create an extremely accurate and powerful fit. A special lever engages notches in actuating ring, facilitating actuation and release. According to Allis-Chalmers, their use of fixture resulted in an over-all production increase of 10 per cent.

WHY IT PAYS TO BUY GALVANIZED SHEETS FROM US



You get the best adhesion of zinc to steel — eliminating waste in fabrication

• USS Galvanized Steel Sheets are noted for their unusually tight protective coating of zinc that effectively resists cracking and flaking under tough fabricating operations—bending, rolling, cutting, stamping, soldering. This means a faster, better fabricating job. And these sheets are consistently uniform in ductility, flatness and surface finish.

USS Galvanized Sheets – as well as *all* the steel sheets and strip that we sell—are the well-known, always reliable products of United States Steel . . . the world's foremost manufacturer of fine steels.

Whatever your requirements for sheets or strip, of any type, it will pay to call U.S. Steel Supply. You will get fast delivery of exactly what you need from our complete stocks. In addition, we are staffed to give qualified technical asistance in helping you solve difficult application problems. And, for cutting or shearing your sheets to size, our modern equipment means closer tolerances, less scrap loss.

In addition to USS Galvanized Steel Sheets, call us for: hot rolled, cold rolled, Vitrenamel, galvannealed, paint bond, corrugated, and long terne sheets, and hot rolled and cold rolled strip.

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NEW PRODUCTS and equipment

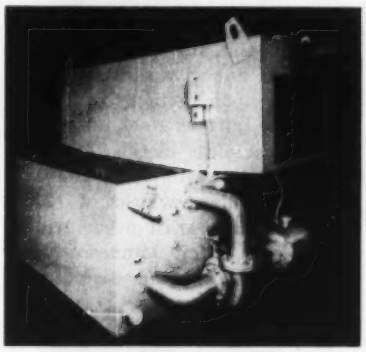
Reply card on page 97 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue

Spray Washers

. . . single,multi-stage

Series 30, standard unit, monorail-type spray washer is claimed the first that can be used as a single unit or combined on the premises into a multi-stage washer to suit the needs of the user without expensive alterations or assembly problems.

The tanks are constructed of 3/16 steel plate with reinforced bottoms and hold 600 to 1000 gallons of solution. Spray nozzles



are mounted on swing-ells and are adjustable for most effective contour spraying of any surface. Pumps are located away from aisle space. Steam or gas may be used for heating the solution, for use of phosphate coatings of iron-phosphate type. Detrex Corp.

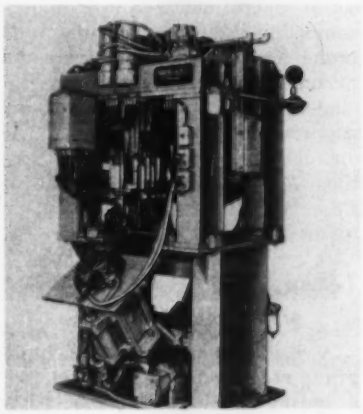
FOR MORE DATA CIRCLE REPLY CARD NO. 1

Multiple Spot Welder

. . . two-platen units

The SX 36 G consists of a universal multiple gun base with two separate platen units, operating independently, loading in extended position. They swing in and lift to the welding position and, after welding sequence is completed, retract and swing out for unloading.

The platen lift and retraction feature permits multiple spot welding of deep drawn sections. The



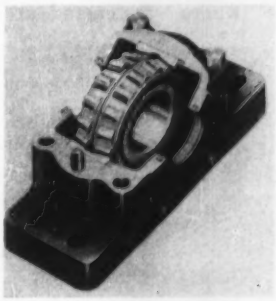
machine is for high production resistance welding applications. Sciaky Bros. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 2

Mill Bearings

. . . steel split housings

This line of mill bearings has been augmented to include pillow



blocks with heavy-duty self-aligning roller bearings for press fit or shafts. They are particularly adaptable for use in steel mills and other heavy industries.

Series LPK7800F bearings have steel split housings. The extremely rugged caps and bases are secured with four extra-heavy bolts and large dowels. They are available in bore size range of 3.1496 inches to 7.4803 inches. Link Belt Co.

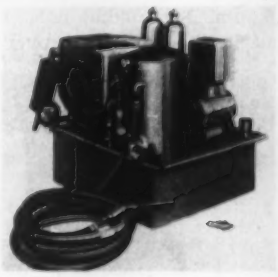
FOR MORE DATA CIRCLE REPLY CARD NO. 3

Fire Equipment

. . . with portable generator

A portable fire-fighting apparatus, combining fire-extinguishing effectiveness with versatility of electric power, is powered by a 3500-w ac Onan electric generating plant.

Equipment utilizes a chemical solution called Unox which multiplies the effectiveness of water 10



to 20 times. With the Versatile Power, no elaborate installation is necessary. National Alarms Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 4

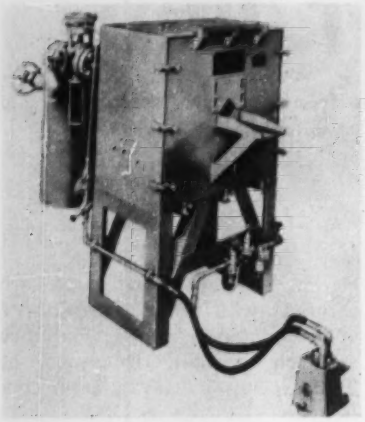
Descaling Cabinet

. . . for handfeeding billets

Elmes Engineering Division's billet descaling cabinet has been designed for use where hand-feeding of the billet is the more practicable method. It is of welded steel construction throughout. The spray ring is fitted with four spray nozzles which completely encircle

the billet. Nozzles are accessible for replacement.

Unit can be supplied with necessary operating controls for use



with existing accumulator system, or as a complete package unit including accumulator system. American Steel Foundries.

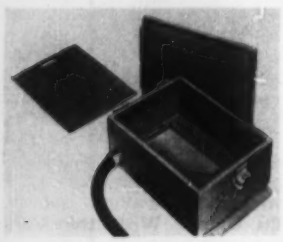
FOR MORE DATA CIRCLE REPLY CARD NO. 5

Electrical Wiring Box

. . . completely water, oil tight

This JIC electrical wiring box is a terminal pull box for electrical wiring. It is constructed so it is completely water, oil or dust tight.

There are no extra holes or knockouts. All conduit holes must be cut in the box. The cover has



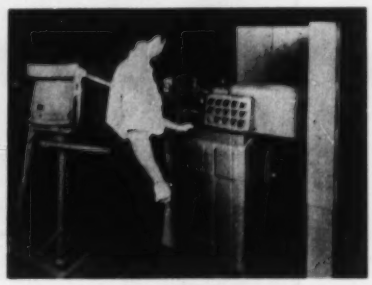
a neoprene sponge rubber gasket. Box is mounted or supported by external mounting feet and is sturdily constructed to withstand damage. Hoffman Engineering Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 6

Inspection Unit

. . . tests gears automatically

The Model GSC Red Ring automated gear speeder inspection unit automatically loads and speeds spur and helical gears for sound test and unloads the gears on conveyor lines. It eliminates



all manual loading, unloading and control functions.

Pushbutton controls facilitate setup operations. Air cylinders control work arbor, loader and brake functions. Electrical and pneumatic control panels are included. The panels are sound suppressed construction. The speeder is powered by a 1-hp motor. National Broach & Machine Co.

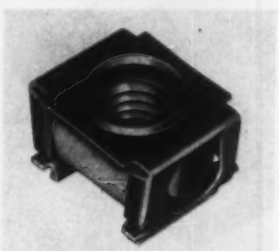
FOR MORE DATA CIRCLE REPLY CARD NO. 7

T-Shaped Nut

. . . preassembled in cage

A T-shaped nut, made of high-grade steel and preassembled into a spring steel retaining cage is the most recent addition to this line of Speed Grip nut retainers. Its most outstanding feature is the ease with which it is slipped into a panel hole and anchor-locked in position. Once installed it is impossible to rotate the nut or drive it out of its steel enclosure.

The nut was designed to withstand excessive amounts of torque and is recommended for applications where fasteners are in



danger of being lost due to stacking, butting or rough handling of sub-assemblies on the production line. Tinnerman Products Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 8

Protective Tape

. . . guards precision surfaces

A paper-backed protective tape that is 100 per cent resistant to outdoor exposure for protecting smooth surfaces during storage and fabrication has been tradenamed

Scotch brand No. 344. Designed to protect polished and finished surfaces against scratches and die marks during and after fabrication, shipment and storage, it features a film-like adhesive that sticks immediately upon contact to such materials as stainless steel, aluminum, glass, most plate metals, etc.

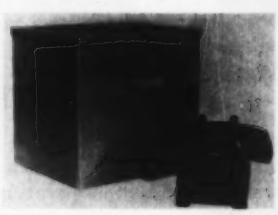
It is made available in 100-yard rolls in standard widths of 12, 24 and 36 inches, with other widths available on order. Minnesota Mining & Mfg. Co.

FOR MORE DATA CIRCLE RTPLY CARD NO. 9

Telephone Exchange

. . . automatic dial

This exchange requires no costly line or cut-off relays, no push-button operation or separate power supplies. It handles all the operation normally requiring a bulky



switchboard and its operator. It requires only two wires from each phone station to exchanges. Pow-

er is supplied by plugging the exchange into any convenient 110-volt ac outlet.

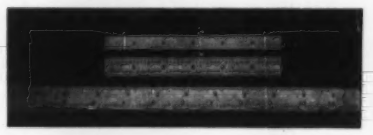
Primarily designed for intercommunication, it can be tied in with trunk lines wherever the telephone company permits. Bliss Electronics Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 10

Steel Rules

. . . readable, stain-resistant

A nonglaring, chrome finish steel rule to meet the demand for precision tools which are easier to read, as well as rust and stain-resistant, is the No. 312 flexible steel rule. It is 6 inches long, graduated in 16ths, 32nds and 64ths. The No. 316 tempered steel rule comes



in two lengths, 6 inches and 12 inches, both graduated in 8ths, 16ths, 32nds and 64ths.

The dull chrome finish makes them easy to read in any light or at any angle. They resist all kinds of corrosion-causing agents. Brown & Sharpe Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 11

Gage Kit

. . . accurate hole inspection

Adjustable Airebore gage kit has a 3 to 12-inch range of adjustment. Any size hole between 3 to 12 inches in diameter can be quickly

and accurately inspected for size, taper and out-of-roundness.

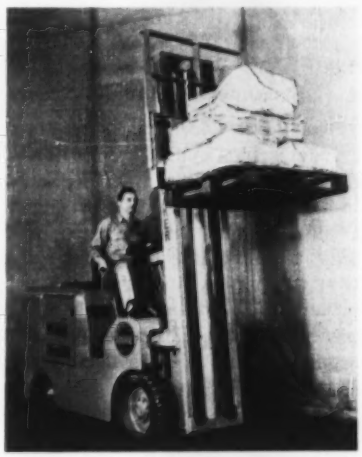
The gage consists of a triangularly shaped spindle body to which are mounted a Plunjet gaging cartridge, and these interchangable components: Centering foot, handle connector, length extensions, adjustment screw. Components for other size ranges, such as 3 to 6 inches, 6 to 9 inches and 9 to 12 inches, are available. Sheffield Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 12

Gas Powered Lift Trucks

. . . have electric transmission

Industrial Truck Division has added two gas powered fork lift industrial trucks to the line. The



FD 50, rated for loads up to 5000 pounds and the FD 60, rated for loads up to 6000 pounds, can do a day's work on less than 5 gallons of gas per day. Electric transmission makes this possible.

Worm gearing, inching control and a transmission with variable voltage direct current generator integral with engine, generating power for series motor mounted on power axle, are outstanding design features of the truck. Baker-Raulang Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 13

Aluminum Etchant

. . . no hard sludge buildup

A granular alkaline-type aluminum etchant composition No. 160, provides a rapid, uniform controlled etch on aluminum. It eliminates troublesome hard sludge buildup on equipment surfaces.

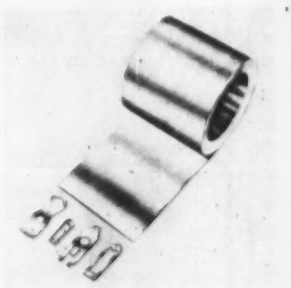
The composition's attributes include the following: It is readily soluble in water to form working solutions having long life; it offers good rinsability in either cold or hot water; its upkeep requirements are low; it gives off no troublesome fumes; and it does not form hard sludge on tank surfaces and heating coils. Oakite Products Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 14

Beryllium Copper

. . . in strip form

Mill-hardened or pretempered beryllium copper, Penntemp, is being introduced in strip form. It offers many features of regular age-hardening beryllium copper, yet requires no heat treatment. It eliminates such difficulties as coil set and poor surface which are



sometimes associated with mill-hardened beryllium copper.

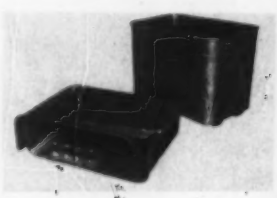
It is available in thickness from 0.001 to 0.025 inch, with minimum tolerances ranging from ±0.0001 to ±0.0004 inch depending on thickness. On widths from ⅛ to 5 inches, tolerances of ±0.001 and ±0.002 are regularly held. It is available in five tempers, each offering a different combination of strength and formability. Penn Precision Products Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 15

Steel Trucks

. . . simple to assemble, handle

Round-cornered, knocked-down steel floor trucks are designed for use in warehousing and metalworking industries. All models feature



a smooth rolled top, 18-gage cold-rolled steel construction, angle base frames, channel caster supports, and all are equipped with 5-

inch roller bearing steel casters.

Additional features include: Ease of assembly; ease of handling; aluminum or stainless steel construction by special order. Kennett Equipment & Machinery Co.

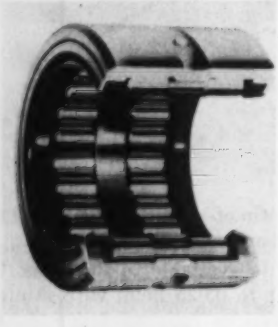
FOR MORE DATA CIRCLE REPLY CARD NO. 16

Sealed Bearing

. . . from standard stock parts

The sealed Guiderol bearing is made from standard stock parts without additional machining operations, so the only extra cost is for seals.

Seal consists of a metal stamping with a rubber rind bonded to one side. It is located in the outer



race bore by heavy press fit. The rubber rind has an inward or outward disposed lip which has an interference fit with the shaft or inner race OD on which it is to operate. McGill Mfg. Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 17

Rollover Hopper

. . . for easy feeding

A new Rollover hopper makes it possible to take small parts to assembly or production areas in their

original shipping boxes or kegs, where these parts are made available to workers in convenient hopper form without rehandling into another container. Of all-welded 10-gage steel construction, the hopper is balanced so it can be easily and safely rotated.

Boxes or kegs can be brought into position for loading in the hopper by fork truck, by stacker, by power or hand lift truck or by wheel or roller conveyors. They also may be used as storage bins. Chas. Wm. Doepke Mfg. Co. Inc.

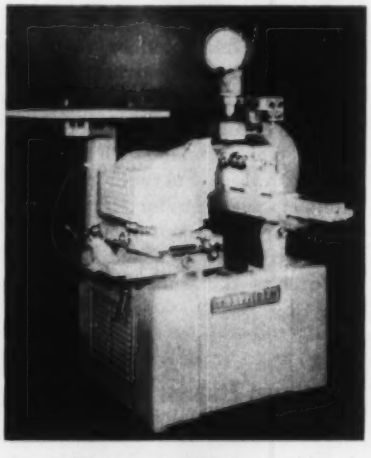
FOR MORE DATA CIRCLE REPLY CARD NO. 18

Micro-Form Grinder

. . . for circular grinding

The model No. 123 Micro-Form grinder grinds cylindrical work and circular form tools up to 8 inches in diameter and 8 inches in length. Designed for circular grinding only, this machine is accurate and easy to operate. It's available with either a 30-power scope or 30-power combination screen and scope. It may be furnished with either live or dead center workheads.

The wheelhead, v-belt-driven by 1-hp, 1725-rpm ball-bearing motor, provides a spindle speed of 3000



rpm. The gear-driven workhead, equipped with change gears, is powered by a ⅓-hp 1800-rpm motor, providing workhead speeds from 40 to 360 rpm. Sheffield Corp.

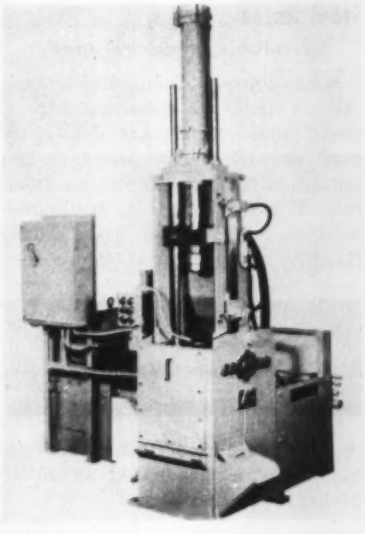
FOR MORE DATA CIRCLE REPLY CARD NO. 19

Broaching Machine

. . . horizontal, vertical operation

A horizontal-vertical model capable of four different basic broaching or press operations is called the Colonial 4. It will handle push and pull-down broaching as well as press operations in the vertical position. In the horizontal position, it provides all the well known advantages of horizontal broaching.

Its versatility lends itself well to both long and short production runs. Power for the lift cylinder is



supplied by a hydraulic pump and motor unit mounted on a separate base that also houses the hydraulic fluid. Coolant pump and reservoir are housed in the main base. Colonial Broach Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 20

Gear Motors

. . . smaller, lighter design

A line of fractional-horsepower gear motors, smaller and lighter than previous designs, has been announced by the general purpose component motor department.

The right-angle and concentric-shaft gear motors are 10 per cent

lighter than previous models because driving motor is close-coupled, positively geared to the output shaft. The units offer maximum transmission of torque, uni-

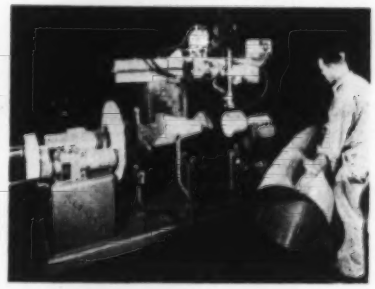
form speed and no slippage. They are reconnectable externally to reverse the direction. General Electric Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 21

Welding Fixture

. . . fully automatic operation

This full automatic circumferential expanding and welding fixture will help solve the problem of sizing, holding and backing up joints for proper welding. End pressure



and expanding mandrels are incorporated to provide alignment of abutting edges.

High speed production demands that machine loading and unloading cycles be kept to an absolute minimum. This fixture provides complete unfolding or swinging out of fixture parts to permit the operator freedom to install parts to be welded. Welding arm swings right 90 degrees out of the way. Airline Welding & Engineering.

FOR MORE DATA CIRCLE REPLY CARD NO. 22

Liquid Stripper

. . . for difficult finishes

A heavy duty, liquid stripper to remove tough, modern finishes like Epons and other chemically resistant finishes is now being marketed. Strypp-Away may be used directly from container or diluted with water depending on the job to be done. It will hold up for long periods of heating without loss of strength and may be used at temperatures as high as 220° F.

In a recent demonstration it completely removed an Epon varnish in 15 minutes heated to 200° F as compared to 50 ounces to a gallon of an alkaline stripper heated to 240° F and requiring 5 hours for removal. DuBois Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 23

FREE LITERATURE

Catalogs and Clip Sheets

Reply card on page 97 will bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue.

Rotary Swager Catalog

Torrington Co. — "The Torrington Swaging Machine," edited and revised from a former bulletin, has a new swager die section discussing designs and production of the dies. The art of swaging, typical uses, operation of the machine, and descriptions of the various types of machines are included and illustrated.

FOR A FREE COPY CIRCLE REPLY CARD NO. 24

Flange, Coupling Selector

Nooter Corp.—A revised edition of the Flange and Coupling Selector is in the same easy-to-read slide rule form and provides all the information contained in the earlier selector, plus new data. OD of flange, thickness, OD of raised face, number of holes, diameter of holes, diameter of bolts, are listed. Average sizes of standard, extra heavy, 3000-pound and 6000-pound couplings are also given.

FOR A FREE COPY CIRCLE REPLY CARD NO. 25

Metal-Protection

American Chemical Paint Co. — "Alodine No. 1200," their metal-protective process that enhances aluminum's natural corrosion-resistance and improves its paint bonding properties, is described in a 4-page bulletin. Flow sheet and equipment specifications for immersion process and results of tensile test data are included.

FOR A FREE COPY CIRCLE REPLY CARD NO. 26

Product Catalog

Quaker State Metals Co. — A complete listing of their line of aluminum products has been published in catalog form. Included in its 24 pages are roofing and siding products, standing seam roofing, weatherboard siding. The company's patented roofing product, cross corrugated roll aluminum roofing, is covered.

FOR A FREE COPY CIRCLE REPLY CARD NO. 27

Power Transmission Products

Morse Chain Co.—A revised 8-page, two-color catalog describes the complete line of Morse mechanical power transmission products. Described and illustrated are silent chain, roller chain and Hy-Vo drives; sprockets, cable chains, drive shafts, couplings and clutches. New information is included on Taper-Lock sprockets, cam clutches and torque limiting clutches.

FOR A FREE COPY CIRCLE REPLY CARD NO. 28

Dresser, Cutter

Desmond-Stephan Mfg. Co. — Catalog No. 75 is intended as a guide to help secure from all grinding wheels the production that the wheel maker has built into them. Mechanical dressers, diamond dressers and abrasive wheels and sticks are illustrated and described.

FOR A FREE COPY CIRCLE REPLY CARD NO. 29

Ball Bearings

Split Ballbearing Corp.—Catalog No. 54 devotes 20 pages to the company's complete line of ball bearings. It gives load and speed ratings, design data, dimensions, etc. Lines shown are single and double row ball bearing bushings in extra-thin section; fully split heavy duty pillow blocks; fully split, heavy duty ball and roller bearings in torque tube dimensions for precision applications.

FOR A FREE COPY CIRCLE REPLY CARD NO. 30

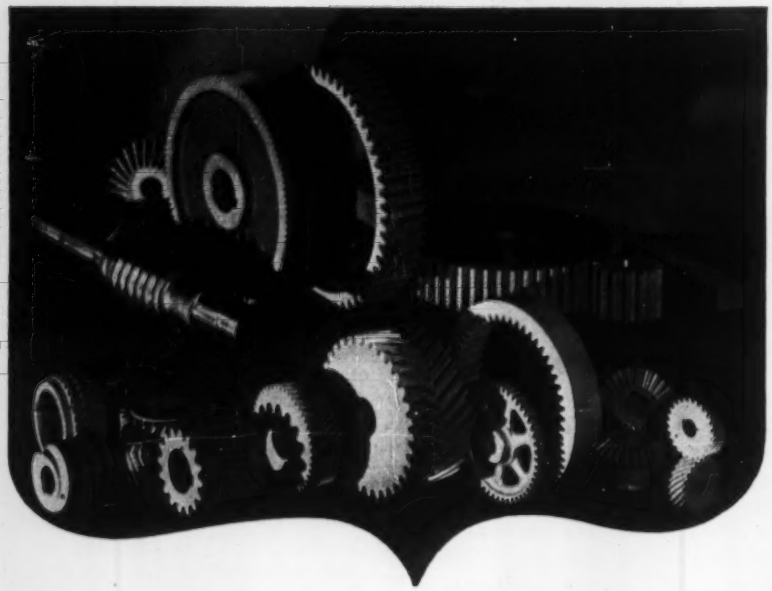
Epoxy Resins

Union Carbide & Carbon Corp.—Bakelite Co. Division offers three technical bulletins on Bakelite C-8 epoxy resins. Specific data are given on physical properties of in-

INDUSTRIAL GEARS

for every purpose from

an ounce to 20,000 lbs.



• Whether you require Spur, Spiral, Herringbone, Bevel, Mitre, Internal or Worm Gears—Worms or Non-Metallic Pinions... here they are... the finest made. For over a half century Horsburgh & Scott has specialized in making gears that represent the best in engineering design, accurate workmanship and fine materials. Economical too, for they are standardized and built to endure. With a complete line of all types and sizes . . . here's one source for all gears and gear products.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

Send note on Company Letterhead for 488-Page Catalog 49

dividual resins and hardeners together with physical, chemical and electrical properties of recommended resin-hardener combinations.

FOR A FREE COPY CIRCLE REPLY CARD NO. 31

Swivel Joints

Chiksan Co.—A 32-page catalog, G-4, covers the complete line of Chiksan ball-bearing swivel joints and other products, including loading racks, manifolding lines, all-metal marine and barge hose and flexible aircraft assemblies.

FOR A FREE COPY CIRCLE REPLY CARD NO. 32

Motor Control Catalog

Furnas Electric Co.—A 140-page electric motor control catalog, primarily divided by major classifications, contains engineering and design data including wiring diagrams. It lists more than 2700 items. Bound in five-color Krome-Kote cover, the book contains photographs, descriptions and prices.

FOR A FREE COPY CIRCLE REPLY CARD NO. 33

Selenium Rectifiers

Ther Electric & Machine Works —Four new models of selenium, completely automatic battery chargers used to charge six-cell batteries of either the lead acid or Edison type are described in detail in a 4-page, illustrated bulletin. Charging characteristic graphs and useful information about the length of charging time are prominently displayed.

FOR A FREE COPY CIRCLE REPLY CARD NO. 34

Broaching Machine

Colonial Broach Co.—Latest pull-down broaching machines are treated in detail in a 4-page bulletin which tabulates in complete form specifications on nine different machine models including a 50-ton, 72-inch stroke machine. Also presented in table form with accompanying keyed line drawings are significant dimensions of each model.

FOR A FREE COPY CIRCLE REPLY CARD NO. 35

Materials Handling

William Bal Corp.—An informative folder on hard vulcanized fiber materials handling equipment is titled "Craftsmanship." It describes representative types used in factory, warehouse and store operations.

FOR A FREE COPY CIRCLE REPLY CARD NO. 36

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INFORMATION ON ADVERTISED PRODUCTS

FREE EDITORIAL CLIP SHEETS

Hydraulic Tracer

Pressed Steel Car Co. Inc. — Axelson Mfg. Co. Division offers a 16-page Axelson Trace-O-Matic hydraulic tracer attachment bulletin describing the attachment that may be applied to their heavy duty lathes for duplicating turned parts from inexpensive flat templates. It includes information regarding setup, how to make the plates and 2 pages of case histories.

FOR A FREE COPY CIRCLE REPLY CARD NO. 37

Blast Cleaner

American Wheelabrator & Equipment Corp. — Table-type airless blasting machine is described in bulletin No. 944. One part of the bulletin shows how loading and unloading of the machine is done by auxiliary tables. Another feature concerns special vestibules available in the walls so it can accommodate occasional long pieces.

FOR A FREE COPY CIRCLE REPLY CARD NO. 38

Alloy Designation System

Kaiser Aluminum & Chemical Sales Inc.—A handy wall chart showing new designation system for wrought aluminum and wrought aluminum alloys indicates old and new designations in easy-to-read bold type. It has been designed as a permanent reference. System becomes effective October 1, 1954.

FOR A FREE COPY CIRCLE REPLY CARD NO. 39

Automatic Drill Unit

Dumore Co. Inc.—Series 24 automatic drill unit is described in a 4-page booklet which fully illustrates and gives specification details on the unit relating to physical dimensions, motor control capacity and lubrication. In addition, optional attachments are described.

FOR A FREE COPY CIRCLE REPLY CARD NO. 40

Materials Handling

Stackbin Corp.—A 4-page folder shows graphically how the Stackbin system is used to cut handling costs, save space, improve inventory control and minimize loss and damage. Specifications and prices on Stackbins, Stackracks and sectional Stackbins are given.

FOR A FREE COPY CIRCLE REPLY CARD NO. 41

Burners

Hauck Mfg. Co. — Catalog No. 414 covers Series 480P burners for rotary sand and stone dryers, for rotary calcining kilns which burn oil, or for combination gas and oil using low pressure air.

FOR A FREE COPY CIRCLE REPLY CARD NO. 42

Small Boilers

Cleaver-Brooks Co. — Bulletin AD-135 describes the CB50-80 line of small boilers. The illustrated bulletin contains complete information on these major advantages: Silent operation; fuel flexibility; fast, easy maintenance; automatic safe operation.

FOR A FREE COPY CIRCLE REPLY CARD NO. 43

Stainless Steel Welding

Crucible Steel Co. of America—Data Sheet, "Resistal (R) Stainless Steel Electrodes," a revision of a previously issued booklet, contains much additional information on welding stainless steels. Two types of coating fluxes are covered. A section on welding procedure, a list of alternate electrodes, a table for recommended current ranges are included.

FOR A FREE COPY CIRCLE REPLY CARD NO. 44

Quality Construction

F. H. McGraw & Co.—Outstanding accomplishments of the company are presented in "25 Years

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of Quality Construction." Highlights of the company's work in industrial construction since its beginning in 1929 are covered in the 18 pages.

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Electric Platform Truck

Yale & Towne Mfg. Co.—Bulletin P-1038A pictures and gives dimensions and specifications on Yale 4000 and 6000-pound capacity Worksaver low-lift electric platform trucks. The dead man control and 16-inch diameter turntable are two Yale features of the truck described.

FOR A FREE COPY CIRCLE REPLY CARD NO. 46

Liquid Filters

Wagner Brothers Inc.—A 4-page folder illustrates and describes Wagner's line of permanent membrane type liquid filters. It explains precoating, filtering and cleaning operations with schematic drawings showing flow directions during each of these phases.

FOR A FREE COPY CIRCLE REPLY CARD NO. 47

Cushioned Valve

Golden-Anderson Valve Specialty Co.—New technical bulletin describes Golden-Anderson's cushioned Flowtrol valve. The valve is designed to replace troublesome globe, angle, plug or gate units that require frequent manual opening and closing. One man easily operates the Flowtrol to fully-open or tightly-closed position.

FOR A FREE COPY CIRCLE REPLY CARD NO. 48

Spray Washers

Peters-Dalton Inc.—This company offers a 15-page brochure intended to show their versatility and quality of service. Power Spray Washers is the general heading used to group their operations in cleaning or surface treatment with liquid chemicals.

FOR A FREE COPY CIRCLE REPLY CARD NO. 49

Hand Torches

Air Reduction Sales Co.—A 36-page catalog covers their complete line of torches and gives tips for oxyacetylene cutting and welding. It lists every Airco standard torch and tip, with necessary mixers, extensions, adapters and accessories that are used with the torches.

FOR A FREE COPY CIRCLE REPLY CARD NO. 50

Speed Reducers

Winsmith Inc.—Factual and informative bulletin HW654 presents Winsmith's new line of C worm gear speed reducers. Key features are concisely described. Photographs and drawings illustrate each of the three designs.

FOR A FREE COPY CIRCLE REPLY CARD NO. 51

EDITORIAL REPRINTS:

Cutting Speed

High cutting speeds are working out in production says Robert F. Huber, Machine Tool Editor, on page 64. Economics fix the practical point in the range of what's possible. Practical cutting speeds may be faster than you think.

FOR A FREE COPY CIRCLE REPLY CARD NO. 52

Heat Treating

Old process with new ideas is described on page 68. Molten salt baths can be used for almost any heat treating job above 350° and below 2400° F. The fact that they have unique features forms a basis for some of today's most advanced methods.

FOR A FREE COPY CIRCLE REPLY CARD NO. 53

Pushbutton Welding

A welding process that promises to increase the scope of fusion welding, lower welding costs and reduce requirements for welding skill is covered on page 76. Filler-arc welding is essentially a means of utilizing a continuous-feeding bare electrode wire in a gas-shielded arc.

FOR A FREE COPY CIRCLE REPLY CARD NO. 54

Calling All Inventors

What new devices are needed in today's jetomic age? We are making technological advances as never before, and the need for inventions is at an all-time high. For some of the most urgent requirements, see page 40.

FOR A FREE COPY CIRCLE REPLY CARD NO. 55

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5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

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IT ALL COMES DOWN to one fact... that you can always count on Roebling high carbon flat spring steel to reduce preparation time, machine stoppages and rejects to a minimum. What's more, it's made as you want it... annealed, hard rolled untempered; scaleless tempered; tempered and polished, blued or strawed.

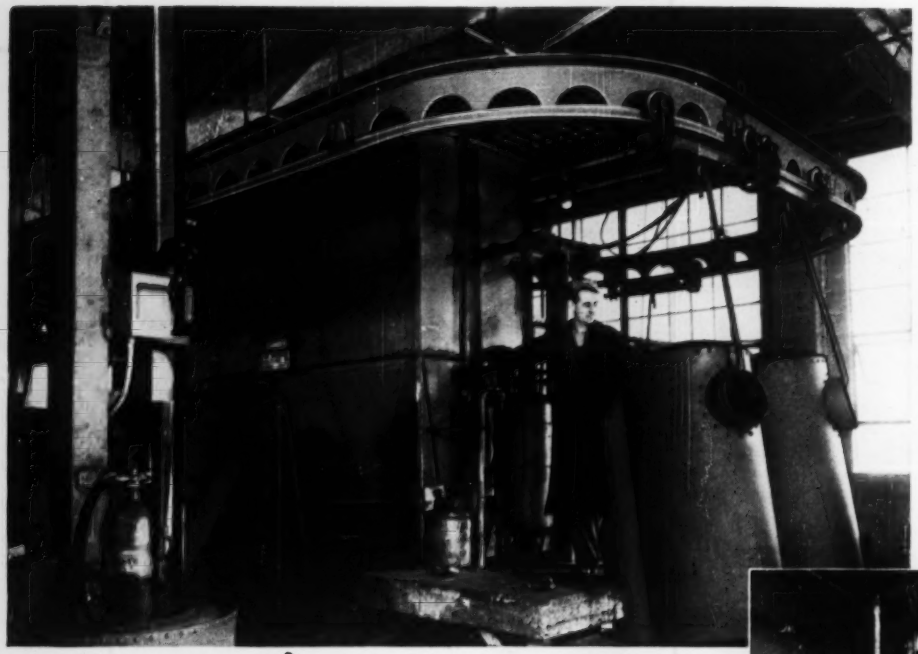
You *pay* for the best every time you buy flat spring steel. Make sure you *get* it. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

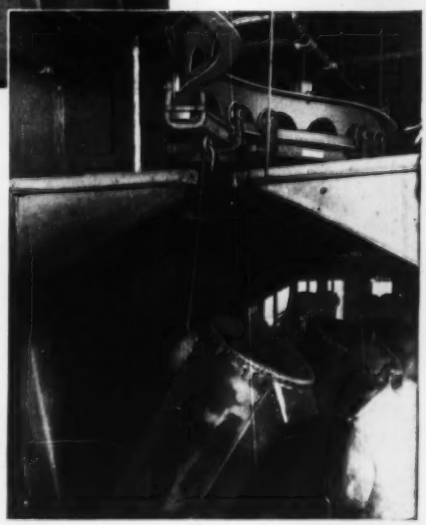
California giant Sequoias—largest of all trees.

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.



One man transfers furnace bodies, weighing 200 lbs., coming from welding booths to Tramrail track by means of a lift platform. Usually when he advances one carrier to spray booth, all 16 carriers must be moved at same time.

The curved track section is necessary to bring the furnace bodies near the water screen during spray painting so that paint in atmosphere will be removed properly. All points of a body are easily reached when supported overhead and the work is extremely fast.



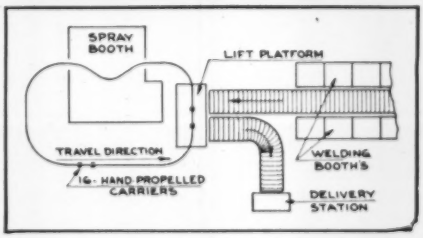
Easy Push Moves 16 Carriers on Spray Booth Loop

CAN one man push 16 loaded four-wheel carriers (with 64 wheels in all) around an enclosed Tramrail track loop having six left-hand and two right-hand curves?

That question bothered the Armstrong Furnace Co., Columbus, Ohio, one of the world's largest furnace manufacturers, when they were developing their paint-spray systems for painting furnace bodies. There was considerable fear that friction and binding of so many carriers would create too great a load for one man to push hundreds of times during a normal working day.

They now have two such systems in operation. One man easily moves the carriers even when all are loaded. Little effort is required because of ball-bearing wheels and hard smooth flat treads on both wheels and track and easy swiveling yokes.

The systems are extremely efficient, requiring only two men each. 300 furnace bodies can be painted with each, in an eight-hour period.



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CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7862 East 284th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

STEEL
August 30, 1954

Market Outlook

THERE'S an important turn in the steel market: Warehouse business is picking up.

That's significant because of the diversity of consumers who get their steel from warehouses. As a whole, warehouse customers are the smaller users of steel, but because there are a great many of them they form a market for approximately 20 per cent of all finished steel sold.

FROM ALL QUARTERS—The upturn in warehouse business is noted not only in tonnage being sold but also in number of orders. The upturn is coming not only from the larger customers but from the smaller ones, too.

Some warehouses reveal their August business is up 20 to 25 per cent over July. Perhaps comparison with July is unfair, because that was a very poor month, but if you want to make comparisons with the more "normal" months of May and June you'll find August still is ahead by 10 per cent.

GROWING OPTIMISM— This upturn is instilling optimism in warehousemen. They think the improvement will continue.

What's causing the improvement? Probably three things: Steel inventories have been pretty well liquidated. Most consuming plants are back to work after vacations. Business is pretty good and in some cases is improving.

The upturn in some business lines is verified by a midwest company making loans for individuals to purchase appliances and furniture. Each month this summer that company has seen an increase in its business volume.

BACK IN THE MARKET—In the New York area, makers of lockers and kitchen cabinets are starting to buy steadily for the first time this year, and producers of equipment for aircraft and restaurants are boosting their demand for stainless steel.

Around Boston there's a mild improvement in orders for finished wire; buttweld pipe orders are up 10 to 20 per cent. At Los Angeles, structural producers report their year-long business slump is over now that construction projects are booming. At Seattle, foundry operations are above normal, and order backlogs are fair.

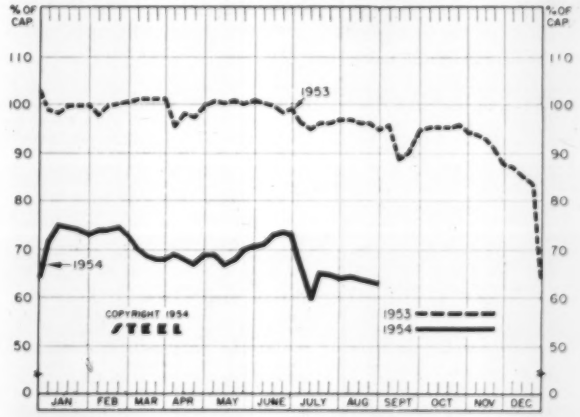
CONTRAST—Good business does not extend across the board, however. It's sluggish with steel mills. Because of this, mills are seeking small business that ordinarily is considered grist for the warehouses. Nevertheless, warehouses note a business pickup.

SLOWER— The slow pace of mill business is reflected in the national rate of steel ingot production. It declined for the third consecutive week. The latest decline, 0.5 point from the preceding week, put the rate down to 62.5 per cent of capacity.

Although the August ingot rate has been sluggish, volume produced will equal or slightly exceed July's 6,635,000 net tons.

STEADY— Pricewise, iron and steel are steady, with STEEL's finished steel composite at $117.77 a net ton. Steelmaking scrap holds at $29 a gross ton. Exports are a big support to that price level for scrap. With a little less than two-thirds of the nation's steelmaking capacity in operation, mills feel no urgency to add to their already large stocks of scrap.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Aug. 29	Change	Same Week 1953	Same Week 1952
Pittsburgh	62.5	+ 1.5	97	98
Chicago	65.5	+ 0.5*	94.5	101
Mid-Atlantic	61	+ 2	96	95
Youngstown	63	— 1	106	106
Wheeling	70.5	— 7.5	94	94.5
Cleveland	56.5	— 0.5*	102	104.5
Buffalo	56	0	106.5	104.5
Birmingham	62	0	94	100
New England	52	0	85	92
Cincinnati	52.5	+ 1	75.5	90
St. Louis	46.5	— 5	94.5	90
Detroit	62.5	+ 5.5	106	106
Western	77	— 5	102.5	107
National Rate...	62.5	— 0.5	94.5	98.5

INGOT PRODUCTION‡

	Week Ended Aug. 29	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	93.1†	91.8	96.9	134.6
NET TONS (In thousands)	1,481†	1,825	1,557	2,162

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

Metalworking Outlook—p. 21 Technical Outlook—p. 63

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Aug. 24

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.525	Bars, H.R., alloy	8.783	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.917	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.088	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.275	Bars, H.R., carbon	5.023	Pipe, black, buttweld (100 ft)	15.000	Black plate, can making quality	6.233
Axles, railway	7.500	Bars, reinforcing	5.058	Pipe, galv., buttweld (100 ft)	18.310	Wire, drawn, carbon	7.938
Wheels, freight car, 33 in. (per wheel)	48.500	Bars, C.F., carbon	8.174	Pipe, line (100 ft)	146.804	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.675	Bars, C.F., alloy	11.285	Casing, oil well, carbon (100 ft)	154.216	Bale ties (bundle)	5.860
Structural Shapes	4.517	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	227.875	Nails, wire, 8d common	7.815
Bars, tool steel, carbon (lb)	0.430	Sheets, H.R., carbon	4.880	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	7.109
Bars, tool steel, alloy, oil hardening die (lb)	0.525	Sheets, C.R., carbon	5.871	Tubing, mechanical, carbon	‡	Woven wire fence (20-rod roll)	16.815
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Sheets, galvanized	7.140	Tubing, mechanical, stainless, 304 (100 ft)	161.193	‡Not available.	
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.350				
		Strip, C.R., carbon	7.507				

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 24 1954	Aug. 17 1954	Month Ago	July Average
(1947-1949=100)	144.5	144.5	144.5	144.6

STEEL's FINISHED STEEL PRICE INDEX*

	Aug. 25 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	194.19	194.19	194.19	189.38	152.90
Index in cents per lb	5.261	5.261	5.261	5.130	4.142

STEEL's ARITHMETICAL PRICE COMPOSITES

	Aug. 25 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT*	$117.77	$117.77	$117.64	$115.56	$91.55
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.10
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.60
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	29.00	29.00	27.33	42.17	21.92

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.
†Revised

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Aug. 25 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.35
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.35
Bars, H.R., del. Philadelphia	4.55	4.55	4.55	5.302	3.816
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	3.95
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.25
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.25
Shapes, del., Philadelphia	4.53	4.53	4.53	4.38	3.492
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.40
Plates, Chicago	4.225	4.225	4.225	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.35	3.50
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.225	4.55	3.50
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.25
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.20
Sheets, Galv. Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pitts.	4.05	4.05	4.05	4.025	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45-5.95	4.275
Strip, C.R., Chicago	6.00	6.00	6.00	5.70	4.00
Strip, C.R., Detroit	5.60-5.90	5.60-5.90	5.60-5.90	5.45-6.05	4.20
Wire, Basic, Pitts.	5.75	5.75	5.75	5.475-5.525	4.15
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.35-6.55	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$7.75
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$61.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$" Pitts.	4.675	4.675	4.675	4.525	3.40

PIG IRON, Gross Ton	Aug. 25 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	49.66	49.66	59.66	60.75	49.39
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, del. Phila.	50.16	50.16	60.16	61.25	49.89
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	39.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	60.43	45.43
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$29.50	$29.50	$28.50	$44.50	$23.00
No. 1 Heavy Melt, E. Pa.	27.50	27.50	24.50	42.50	20.25
No. 1 Heavy Melt, Chicago	30.00	30.00	29.00	39.50	21.50
No. 1 Heavy Melt, Valley	30.50	30.50	29.50	42.50	23.75
No. 1 Heavy Melt, Cleve.	28.50	28.50	24.50	41.50	20.00
No. 1 Heavy Melt, Buffalo	26.50	26.50	26.50	42.50	24.25
Rails, Rerolling, Chicago	44.50	44.50	43.50	54.50	34.50
No. 1 Cast, Chicago	35.50	35.50	35.50	41.00	39.00

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$13.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.75
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.00

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 22.20, pigs 20.50 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 24; No. 43, 5% Si, 23.8; No. 142, 4% Cu, 25.1; No. 195, 4.5% Cu, 0.8% Si, 24.5; No. 214, 3.8% Mg, 25.2; No. 356, 7% Si, 0.3% Mg, 23.9.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.; Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb del.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 30.00 del. Conn. Valley, 30.00 del. Midwest; Lake 30.00 del; Fire refined 29.75 del.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $145-$150 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis; N.Y. basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $285-$290, nom., per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices

DAILY NONFERROUS PRICE RECORD

	Price Aug. 25	Last Change	Previous Price	July Avg.	June Avg.	Aug. 1953 Avg.
Copper	30.00	Apr. 12	29.75-30.00	30.000	30.000	29.375
Lead	13.80	June 15	14.05	13.800	13.906	13.800
Zinc	11.00	June 3	10.50	11.000	10.923	11.000
Tin	93.125	Aug. 25	93.25	96.562	94.178	80.530
Nickel	60.00	Jan. 14, 1953	56.50	60.000	60.000	60.000
Aluminum	22.20	Aug. 5, 1954	21.50	21.500	21.500	21.500
Magnesium	27.00	Mar. 9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99 + %, del.; Magnesium 99.8%, Freeport, Tex.

f.o.b. Port Colborne, Ont., including import duty, New York basis, add 0.92.

Osmium: $140-$150 per troy oz nom.

Palladium: $21 per troy oz.

Platinum: $84-$87 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 93.125.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max.) $4.72; grade A-2 (0.5% Fe max) $4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.95 per lb, f.o.b. shipping point; less than 1000 lb $5.10 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.00, brass special 11.25, intermediate 11.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.35, special high grade 12.50, die casting alloy ingot 15.00, del.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50. (Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingots: Piston Alloy 20.75-21.25; No. 12 foundry alloy (No. 2 grade) 19.75-20.25; 5% silicon alloy, 0.60 Cu max., 23.25-23.50; 13 alloy, 0.60 Cu max., 23.25-23.50; 195 alloy 21.25-22.25; 108 alloy 20.25-20.75; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-21.50; grade 2, 20.00-20.50; grade 3, 19.00-19.50; grade 4, 18.00-18.50.

Brass Ingot: Red brass, No. 115, 27.00-28.50; tin bronze No. 225, 39.00-40.00; No. 245, 33.25-33.75; high-leaded tin bronze, No. 305, 31.50-33.00; No. 1 yellow, No. 405, 23.25-24.25; manganese bronze No. 421, 26.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.68; rod, bar, wire, $1.65.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire del., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $19.00 per cwt; pipe, full coils $19.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $6; hot-rolled and forged bars, $6.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 18.50-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $28; C. R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

	NICKEL, "A" Nickel	MONEL, Monel	INCONEL, Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	60.0		

ALUMINUM

(30,000 lb base; freight allowed over 499 lb) Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-49	34.9	...	...
0.135-0.096	12-48	35.4	...	...
0.095-0.077	12-48	36.1	33.6	38.6
0.076-0.061	12-48	36.7	33.8	38.8
0.060-0.048	12-48	37.2	34.1	39.2
0.047-0.038	12-48	37.7	34.6	39.6
0.037-0.030	12-48	38.1	35.0	40.3
0.029-0.024	12-48	38.7	35.3	40.8
0.023-0.019	12-36	39.4	36.1	41.6
0.018-0.017	12-36	40.2	36.7	42.5
0.016-0.015	12-36	41.1	37.5	43.7
0.014	12-24	42.1	38.5	45.0
0.013-0.012	12-24	43.3	39.2	46.0
0.011	12-24	44.3	40.4	47.6
0.010-0.0095	12-24	45.5	41.5	49.2
0.009-0.0085	12-24	46.8	43.0	51.3
0.008-0.0075	12-24	48.4	44.2	53.1
0.007	12-18	49.9	45.7	55.4
0.006	12-18	51.5	47.1	60.4

*72-180 in. lengths. †26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. width or dia, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	34.7	38.9
5OS-F	34.7	38.9
4S-F	35.7	40.6
52S-F	37.4	42.4
61S-T6	38.6	43.0
24S-T4*	40.8	46.9
75S-T6*	48.6	55.2

*24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 43S-34.4, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 50.2-38.4 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
¾	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in., 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	...	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.80	48.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clippings 13.00; low copper clippings 13.00; mixed clippings 11.00; old sheet 10.00; borings and turnings 6.00; pistons and struts 7.50; crankcases 10.00; industrial castings 10.00.

Copper and Brass: Heavy copper and wire, No. 1 24.50-25.00; No. 2 copper 23.00-23.25; light copper 21.00-21.25; No. 1 composition red brass 19.00-19.50; No. 1 composition turnings 18.50-19.00; mixed brass turnings 11.50-12.00; new brass clippings 18.00; No. 1 brass rod turnings 15.00; light brass 11.50-12.00; heavy yellow brass 14.00; new brass rod ends 16.00; auto radiators, unsweated 15.00; cocks and faucets 16.00-16.50; brass pipe 16.50-17.00.

Lead: Heavy 11.00-11.25; battery plate 5.75-6.00; linotype and stereotype 13.00; electrotype 11.50; mixed babbitt 12.00-12.50.

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 23.00-25.00; old sheet 21.00-23.00; turnings 16.00-18.00; rods 23.00-25.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 50.00.

Zinc: Old zinc, 4.75-5.00; new die cast scrap, 4.50-4.75; old die cast scrap, 3.00-3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 15.50-15.75; 5I8, 52S clippings 15.25-15.75; 14S, 17S, 24S clippings 14.50-14.75; mixed clipping 14.00-14.50; old sheet 13.00-13.50; old cast 13.00-13.50; clean old cable, free of steel 15.00-15.75; borings and turnings 13.25-13.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper Brass: No. 1 copper 27.00-27.25; No. 2 copper 25.50-25.75; light copper 24.00-24.25; refinery brass (60% copper) per dry copper content 23.00-24.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 26.75-27.00; No. 2 copper 25.00-25.25; light copper 23.50-23.75; No. 1 composition borings 20.50; No. 1 composition solids 21.00-21.50; heavy yellow brass solids 17.00; yellow brass turnings 16.00; radiators 17.75-18.00.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.115; 200-499 lb $1.10; 500-999 lb $1.095; 1000 lb or more $1.09.

Zinc: Bar 18.50, bar or flat top 17.50 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,00 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

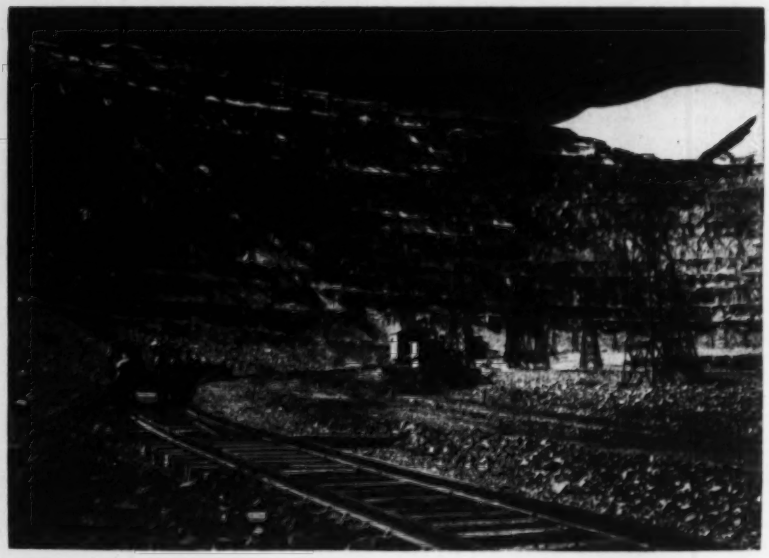
Sodium Stannate: Less than 100 lb 71; 100-600 lb 56.7; 700-1900 lb 54.3; 2000-9900 lb 52.5; 10,000 lb or more 51.4.

Stannous Chloride: (Anhydrous): Less than 50 lb $1.57; 50 lb $1.23; 100-300 lb $1.08; 400-900 lb $1.055; 1000-1900 lb $1.031; 2000-4900 lb 99.4; 5000-19,000 lb 99.3; 20,000 lb and over 87.2.

Stannous Sulphate: Less than 5 lb $1.269; 50 lb 96.9; 100-1900 lb 94.9; 2000 lb and over 92.9.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals



Empty copper mines like this one at Bingham Canyon, Utah, mean . . .

October could be a critical month for copper and brass fabricators as result of strikes. Inventories, fairly comfortable a month ago, may be less so a month hence

OCTOBER looms as a critical month for copper and brass fabricators.

Refinery and mine strikes in copper last week tied up 75 per cent of the supply. Though a long strike is considered unlikely, even a two-week strike would have ramifications affecting copper through the end of the year.

The Facts—Some 32,000 copper and brass workers were idled by the wave of labor restlessness. First to move were 10,000 workers at Kennecott Copper Corp.'s western mines and smelters. Then came an equal number from Anaconda Copper Mining Co.'s Montana and Idaho operations. Thousands of miles away, 7000 workers at Kennecott's Chilean mines walked out. A sympathy strike at Anaconda properties there could knock out Chilean production.

Topping this, nearly 5000 American Brass Co. workers at Buffalo and Ansonia and Torrington, Conn., struck. These plants represent a substantial portion of ABC's capacity estimated at 25 per cent of all U. S. brass mill output. Another big copper supplier, American Smelting & Refining Co., also deals with International Union of Mine, Mill & Smelter workers and could be shut down at any minute.

With every week of work stoppage, some 15,000 tons of refined copper are lost to the economy. Fabricators entering August had 66,256 tons on hand, less than the month before and a year ago, but roughly equivalent to a month's losses in new metal if the strike continued. The inventory picture, fairly comfortable four weeks ago, promises to reverse itself a month hence.

Possibilities—If governmental action is necessary it could take one of two forms: Most likely is use of the Taft-Hartley law to maintain output while finding agreement. Second is to assuage fabricators' tensions by releasing copper from stockpile.

Several years ago 85,000 tons of copper were pulled from the security cache to tide over needy defense contractors. In the last four months 150,000 tons of Chilean copper have been added, so there's metal available. However, this would require congressional action or an executive order by the President under a national emergency decree. Also it might smack of government strikebreaking.

Price Pinch?—Chance of a price rise in copper depends on the strike's tenure, but odds are against further advances now. Much Chilean metal has been moving to Europe, and there's suspicion much of that copper has gotten into the hands of dealers and speculators. This could show up in a supply pinch at premium prices. Scrap grades of copper are all stronger, custom smelters say they're losing money at new scrap buying and present metal prices.

A 14-per-cent dip in fabricators' July sales reflects vacation periods primarily, as unfilled orders entering August rose 8000 tons to 130,576 tons. Consumption of copper in July skidded 23 per cent to 80,751 tons. Order books of producers and custom smelters are already loaded for September deliveries, and commitments are not being made for October, when today's events will have their strongest effect.

Brass Mill Extras Revised

New brass mill extras posted this month change primarily the lower brackets of quantities (from 2000 pounds down). In lots from 2000-5000 lb, extras are up 0.50 to 1 cent, from 1000-2000 lb they are up 1 cent to 2 cents, from 500-1000 lb up 1.5 cents to 7.5 cents, from 300-500 lb, up 3 cents to 13 cents, and from 100-300 lb, up 5 cents to 25 cents. Extras don't apply over 5000 lb. Seamless tubing extras were altered slightly, resulting in a price reduction. For lots of 30,000 lb or more, deduction is now 1 cent per pound compared with 0.50 cent previously.

Lead and Zinc Rescued

Thanksgiving came early this year for lead and zinc producers. While denying tariff hikes on imported lead and zinc, President Eisenhower rescued the industry by initiating a mammoth stockpile purchase program. He authorized purchases of domestic metal in the fiscal year ending next June 30 to the tune of 300,000 tons of zinc and 200,000 tons of lead. Also the government will absorb lead and zinc for supplemental stockpile by bartering agricultural surplusses and will seek to impress foreign countries not to take advantage of the situation by flooding the U. S. market.

Such an ambitious program cannot help but influence the lead-zinc market and prices. A little over twice the present rate of stockpiling seems assured. A hike in price of both metals now becomes a near-certainty.

every grade of ZINC

for urgent military and

civilian requirements

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BRASS SPECIAL

INTERMEDIATE

HIGH GRADE

SPECIAL HIGH GRADE

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STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 107. Key to footnotes, page 109.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)
Detroit R7 .....$66.00
Houston 85 .....73.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Aliquippa,Pa. J5 ....$64.00
Bessemer,Pa. U5 .....64.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 ....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 ....64.00
Lackawanna,N.Y. B2 ..64.00
Munhall,Pa. U5 .....64.00
So.Chicago,Ill. R2,U5 ..64.00
So.Duquesne,Pa. U5 ..64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$78.00
Bessemer,Pa. U5 ....78.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley, Ala. T2 .....78.00
Fairfield,Ala. T2 ....78.00
Fontana,Calif. K1 ....86.00
Gary, Ind. U5 .....78.00
Geneva,Utah C11 ....78.00
Houston 85 .....85.00
Johnstown,Pa. B2 ....78.00
Lackawanna,N.Y. B2 ..78.00
LosAngeles B3 .....87.50
Munhall,Pa. U5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14.78.00
So.Duquesne,Pa. U5 ..78.00
So.SanFrancisco B3 ....87.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. R2, T7 ....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....88.00
Fontana,Calif. K1 ....105.00
Gary,Ind. U5 .....86.00
Houston 85 .....93.00
Ind.Harbor,Ind. Y1 ....86.00
Johnstown,Pa. B2 ....86.00
Lackawanna,N.Y. B2..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago R2,U5,W14.86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ..96.50

SKELP
Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
Munhall,Pa. U5 .....3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS
Aliquippa,Pa. J5 ....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 ....4.675
Fontana,Calif. K1 ....5.475
Gadsden,Ala. R2 .....4.675
Houston 85 .....5.075
IndianaHarbor,Ind. Y1 4.675
Johnstown,Pa. B2 ....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....5.015
Kokomo,Ind. C16 .....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ...4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ..5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 ....4.675
Sterling,Ill.(1) N15 ...4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
SparrowsPoint,Md. B2 4.775
Torrance,Calif. C11 ...5.475
Worcester,Mass. A7 ...4.975

STRUCTURALS

Carbon Steel Stand. Shapes
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 .....4.90
Gadsden,Ala.(31) R2 ..4.28
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston 85 .....4.65
Ind.Harbor,Ind. 1-2 ....4.25
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.85
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.80
Phoenixville,Pa. P4 ....3.95
Seattle B3 .....5.00
So.Chicago U5, W14....4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 .....4.25

Wide Flange
Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 .....5.25
Lackawanna,N.Y. B2 ..4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....3.95
So.Chicago,Ill. U5 .....4.25

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston 85 .....5.60
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 .....5.20

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
FontanaCalif. K1 .....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah C11 .....6.40
Houston 85 .....6.80
Ind.Harbor,Ind. I-2, Y1.6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....7.00
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14.6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 .....6.40

PILING

Bearing Piles
Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ...5.075
Lackawanna,N.Y. B2 ..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill. U5 ....5.075

PLATES

PLATES, Carbon Steel
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 .....4.225
Buffalo(31) R2 .....4.255
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5 .....4.225
Cleveland(31) R2 .....4.285
Coatesville,Pa. L7 ....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.375
Fairfield,Ala. T2 .....4.225
Gadsden,Ala.(31) R2 ..4.255
Fontana,Calif.(30) K1..4.875
Gary,Ind. U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....3.975
Houston 85 .....4.625
Ind.Harbor,Ind. I-2, Y1 4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.40
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ....5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago,Ill.(31) R2..4.295
So.Chicago,Ill. U5,W14..4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ...4.225
Warren,O.(31) R2 .....4.265
Weirton,W.Va. W6 .....4.225
Youngstown(31) R2 ....4.275
Youngstown U5, Y1 ....4.225

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 ....6.025
Geneva,Utah C11 .....5.375

PLATES, Wrought Iron
Economy,Pa. B14 .....9.80

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.45
Conshohocken,Pa. A3 ..6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1 ..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston 85 .....6.85
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2 ..6.45
Youngstown U5, Y1.....6.45

PLATES, Alloy
Claymont,Del. C22 ....5.80
Coatesville,Pa. L7 ....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Houston 85 .....6.20
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14.5.80
SparrowsPoint,Md. B2 ..5.80

FLOOR PLATES
Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 .....5.15
Ind.Harbor,Ind. I-2 ...5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 .....5.275

PLATES, Ingot Iron
Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.825
Warren,O. c.l. R2 .....4.825

BARS

BARS, Hot-Rolled Carbon
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Canton,O.(31) R2 .....4.46
Clairton,Pa. U5 .....4.30
Cleveland(31) R2 .....4.36
Ecorse,Mich. G5 .....4.45
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Gadsden,Ala.(31) R2 ...4.33
Houston 85 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Massillon,O. R8 .....4.30
Minnequa,Colo. C10 ....4.75
Munhall,Pa. U5 .....4.30
Newark,N.J. W18 .....4.55
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.65
Putnam,Conn. W18 .....5.95
Readville,Mass. C14 ....5.95
St.Louis,Mo. M5 .....5.70
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.85
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Alloy (Turned and Ground)
Cumberland,Md.(5) C19.4.65

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.625
BeaverFalls,Pa. M12 ..6.625
BeaverFalls,Pa. R2 ...6.685
Bethlehem,Pa. B2 .....6.625

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....5.075
Buffalo(31) R2 .....5.105
Canton,O. T7 .....5.075
Canton,O.(31) R2 .....5.115
Chicago(31) R2 .....5.145
Clairton,Pa. U5 .....5.075
Detroit R7 .....5.175
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 .....6.125
Fairless,Pa. U5 .....5.225
Gary,Ind. U5 .....5.075
Houston 85 .....5.475
Ind.Harbor,Ind. I-2, Y1 5.075
Johnstown,Pa. B2 .....5.075
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2..5.075
LosAngeles B3 .....6.125
Massillon,O.(31) R2 ...5.115
Midland,Pa. C18 .....5.075
So.Chicago U5, W14 ..5.075
So.Duquesne,Pa. U5 ..5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5 .....5.075

BARS & SMALL SHAPES, H.R.
High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland(31) R2 .....6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston 85 .....6.85
Ind.Harb.,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 .....7.05
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So.Duquesne,Pa. U5 ...6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O.(31) R2 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....4.85
SanFrancisco S7 .....4.70

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston 85 .....5.60
KansasCity S5 .....5.80
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12 ...5.40
BeaverFalls,Pa.(31) R2..5.46
Camden,N.J. P13 .....5.85
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 .....5.40
Detroit R7 .....5.55
Detroit B5, P17 .....5.60
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ...5.40
Gary,Ind.(31) R2 .....5.47
GreenBay,Wis. F7 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn.(31) R2 ..5.90
Harvey,Ill. B5 .....5.40
LosAngeles(31) R2 .....6.85
LosAngeles S30 .....6.85
Mansfield,Mass B5 .....5.95
Massillon,O. R8 .....5.40
Massillon,O.(31) R2 ....5.44
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.65
Putnam,Conn. W18 .....5.95
Readville,Mass. C14 ....5.95
St.Louis,Mo. M5 .....5.70
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.85
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.85
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....6.625
BeaverFalls,Pa. M12 ..6.625
BeaverFalls,Pa. R2 ...6.685
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 .....6.625
Detroit R7 .....6.725
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind.(31) R2 .....6.695
Hammond,Ind. L2, M13 6.625
Hartford,Conn.(31) R2.6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ...6.925
Massilon,O. R8 .....6.625
Massillon,O.(31) R2 ...6.665
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ...6.925
Youngstown F3, Y1 ....6.625

BARS, Reinforcing (fabricators)
Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo(31) R2 .....4.33
Cleveland(31) R2 .....4.36
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ..4.90
Gadsden,Ala.(31) R2...4.33
Gary,Ind. U5 .....4.30
Houston 85 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
SandSprings,Okla. S5 ..5.15
Seattle B3, N14, P23...5.05
So.Chicago(31) R2 ....4.37
So.Duquesne,Pa. U5 ...4.30
So.SanFrancisco B3 ....5.05
SparrowsPoint,Md. B2 ..4.30
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Youngstown U5 .....4.30
Youngstown(31) R2 ....4.38

BARS, Reinforcing (Fabricated; to consumers)
Johnstown, ¼-1" B2 ..5.70
KansasCity S5 .....6.50
LosAngeles B3 .....5.95
Marion,O. P11 .....5.65
Seattle B3, N14, P23 ...6.15
So.SanFrancisco B3 ....6.00
SparrowsPt. ¼-1" B2 ..5.70
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS
Avis,Pa.(3) J8 .....4.25
ChicagoHts.(3) C2, I-2.4.30
ChicagoHts.(4) C2, I-2.4.30
Ft.Worth,Tex.(26) T4 ..4.75
Franklin,Pa.(3) F5 ....4.05
Franklin,Pa.(4) F5 ....4.15
Marion,O.(3) P11 .....4.15
Moline,Ill.(3) R2 .....4.30
Tonawanda(3,4) B12 ....4.30
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.50
McK.Rks.(S.R.) L5 ..10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel (18 gage and heavier)
Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ..4.10
Detroit(8) M1 .....4.20
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fairless,Pa. U5 .....4.10
Fontana,Calif. K1 ....4.825
Gadsden,Ala. R2 .....4.05
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15

GraniteCity,Ill. G4 ....4.25
Houston S5 .....4.45
Ind.Harbor,Ind. I-2, Y1..4.05
Irvin,Pa. U5 .....4.05
Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ..4.05
Mansfield,O. E6 (37) ...4.05
Mansfield,O. E6 (38) ...4.80
Munhall,Pa. U5 .....4.05
Newport,Ky. N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth, O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 ga. lighter)
Gadsden,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ..6.15
Ecorse,Mich. G5 .....6.25
Fairfield,Ala. T2 .....6.10
Fairless,Pa. U5 .....6.15
Fontana,Calif. K1 ....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1 6.10
Irvin,Pa. U5 .....6.10
Lackawanna(35) B2 ...6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 ....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 ....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron
(18 Gage and Heavier)
Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel
(Commercial Quality)
Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Ecorse,Mich. G5 .....5.10
Fairfield,Ala. T2 .....4.95
Fairless,Pa. U5 .....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 .....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 ....5.15
Ind.Harbor,Ind. I-2, Y1.4.95
Irvin,Pa. U5 .....4.95
Lackawanna,N.Y. B2 ...4.95
Middletown,O. A10 ....4.95
Pittsburg,Calif. C11 ...5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 ....4.95
SparrowsPoint,Md. B2 ..4.95
Steubenville,O. W10 ....4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 ....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....7.50
Ecorse,Mich. G5 .....7.65
Fairless,Pa. U5 .....7.55
Fontana,Calif. K1 .....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Irvin,Pa. U5 .....7.50
Lackawanna(37) B2 ...7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron
Cleveland R2 .....5.55
Middletown,O. A10 .....5.45
Warren,O. R2 .....5.55

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.25	7.10
Fairfield T2	6.25	6.50
Gary,Ind. U5	6.25	6.50
Ind.Harbor I-2	6.25	6.50
Irvin,Pa. U5	6.25	6.50
Kokomo,Ind. C16	6.35	....
MartinsFry.,O.W10	6.25	....
Newport,Ky. N9	6.25	6.50
Pitts.,Calif. C11	7.00	....
SparrowsPt. B2	6.25	....

SHEETS, Culvert	Pure Iron
Ashland,Ky. A10	6.75
Fairfield,Ala. T2	6.50
MartinsFerry,O. W10	6.50

SHEETS, Galvanized Steel
Hot-dipped
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Dover,O. R1 .....5.45‡
Fairfield,Ala. T2 .....5.45*
Gadsden,Ala. R2 .....5.45‡
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ...5.45†
Irvin,Pa. U5 .....5.45†
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ...5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45†
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ...6.20‡
SparrowsPt.,Md. B2 ...5.45‡
Steubenville,O. W10 ...5.45‡
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Galvanized
High-Strength Low-Alloy
Irvin,Pa. U5 .....8.20
SparrowsPoint(39) B2 ..8.20

SHEETS, Galvanized Ingot Iron
Ashland,Ky.(8) A10 .....5.70
Canton,O. R2 .....6.20

SHEETS, Galvannealed Steel
Canton,O. R2 .....5.85
Irvin,Pa. U5 .....5.85
Kokomo,Ind. C16 .....5.95†
Newport,Ky. N9 .....6.00
Niles,O. N12 .....6.00

SHEETS, Galvanized
Ingot Iron
(Hot-dipped continuous)
Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 .....5.70

SHEETS, Electrogalvanized
Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 ....5.975

SHEETS, Aluminum Coated
Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ...5.375
Cleveland R2 .....5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Irvin,Pa. U5 .....5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 ga.
Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel
(Commercial Quality)
BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Manafield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 .....5.85

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 .....6.25

SHEETS, Well Casing
Fontana,Calif. K1 .....6.325

STRIP

STRIP, Hot-Rolled Carbon
Allenport,Pa. P7 .....4.05
Alton,Ill. L1 .....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 .....4.25
Bessemer,Ala. T2 .....4.05
Birmingham C15 .....4.05
Bridgeport,Conn.(10)S15 4.05
Buffalo(27) R2 .....4.05
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.20
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fontana,Calif. K1 .....4.825
Gadsden,Ala.(27) R2 ...4.05
Gary,Ind. U5 .....4.05
Houston,Tex. S5 .....4.45
Ind.Harbor,Ind. I-2, Y1.4.05
Johnstown,Pa.(25) B2 ..4.05
KansasCity,Mo.(9) S5 ..4.65
Lackw'na,N.Y.(25) B2..4.05
LosAngeles(25) B3 ....4.80
Milton,Pa. M18 .....4.05
Minnequa,Colo. C10 ....5.15
NewBritain(10) S15 ....4.05
N.Tonawanda,N.Y. B11.4.05
Pittsburg,Calif. C11 ...4.80
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
SanFrancisco S7 .....5.00
Seattle(25) B3, P23 ....5.05
Seattle N14 .....5.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3.4.80
SparrowsPoint,Md. B2 ..4.05
Sterling(1) N15 .....4.05
Sterling,Ill. N15 .....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 .....4.05
Weirton,W.Va. W6 .....4.05
Youngstown U5 .....4.05

STRIP, Hot-Rolled Alloy
Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.70
Fontana,Calif. K1 .....8.10
Gary,Ind. U5 .....6.70
Houston,Tex. S5 .....7.10
KansasCity,Mo. S5 .....7.30
LosAngeles B3 .....7.90
NewBritn.,Conn.(10)S15 6.45
Newport,Ky. N9 .....6.70
Seattle P23 .....7.80
Sharon,Pa. S3 .....6.70
So.Chicago W14 .....6.70
Youngstown U5 .....6.70

STRIP, Hot-Rolled
High-Strength Low-Alloy
Bessemer,Ala. T2 .....6.15
Conshohocken,Pa. A3 ..5.95
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....6.15
Fontana,Calif. K1 .....7.25
Gary,Ind. U5 .....6.15
Houston S5 .....6.55
Ind.Harbor,Ind. I-2, Y1.6.15
KansasCity,Mo. S5 .....6.75
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 .....6.90
Seattle(25) B3, P23 ....7.15
Sharon,Pa. S3 .....6.15
So.SanFrancisco(25) B3.6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 .....6.15
Weirton,W.Va. W6 .....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ...4.30
Warren,O. R2 .....4.65

STRIP, Cold-Rolled Carbon
Anderson,Ind. G6 .....5.75
Baltimore T6 .....5.75
Bridgeport,Conn.(10)S15 5.75
Cleveland A7, J5 .....5.75
Dearborn,Mich. D3 ....5.90
Detroit D2, M1 .....5.90
Detroit P20 .....5.95
Dover,O. G6 .....5.75
Ecorse,Mich. G5 .....5.90
Follansbee,W.Va. F4 ...5.75
Fontana,Calif. K1 .....7.65
FranklinPark,Ill. T6 ...5.85
Ind.Harbor,Ind. I-2 ....6.00
Indianapolis C8 .....5.90
Lackawanna,N.Y. B2 ...5.75
LosAngeles C1 .....7.80
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 .....5.75
NewBedford,Mass. R10..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B8, E5 ..5.75
NewHaven,Conn. A7 ...6.50
NewHaven,Conn. D2 ...6.20
Pawtucket,R.I. R3 ....6.40
Pawtucket,R.I. N8 ....6.30
Pittsburgh J5 .....5.75
Portsmouth,O. P12 .....5.75
Riverdale,Ill. A1 .....5.85
Rome,N.Y.(32) R6 .....5.75
Sharon,Pa. S3 .....5.75
SparrowsPt.,Md. B2 ....5.75
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2 ....6.30
Warren,O. B9, R2, T5..5.75
Weirton,W.Va. W6 ....5.75
Worcester,Mass. A7 ....6.60
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy Steel
Carnegie,Pa. S18 .....12.45
Cleveland A7 .....12.45
Dover,O. G6 .....12.45
Fontana,Calif. K1 .....14.55
FranklinPark,Ill. T6 ..12.45
Harrison,N.J. C18 ....12.45
Mattapan,Mass. T6 ...12.80
Pawtucket,R.I. N8 ....12.80
Sharon,Pa. S3 .....12.45
Worcester,Mass. A7 ...12.75
Youngstown C8 .....12.90

STRIP, Cold-Rolled
High-Strength Low-Alloy
Cleveland A7, J5 .....8.60
Dearborn,Mich. D3 ....8.75
Dover,O. G6 .....8.60
Ecorse,Mich. G5 .....8.75
Lackawanna,N.Y. B2 ..8.425
Pittsburgh J5 .....8.60
Sharon,Pa. S3 .....8.60
SparrowsPoint,Md. B2..8.425
Warren,O. R2 .....8.60
Weirton,W.Va. W6 .....8.60
Youngstown Y1 .....8.60

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....6.35

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.775
Riverdale,Ill. A1 .....4.625
Sharon,Pa. S3 .....4.475
Youngstown U5 .....4.475

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div., H. K. Porter Co. Inc.
B14 A. M. Byers Co.
B15 J. Bishop & Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.
G2 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H7 Helical Tube Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Corp.
M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott
N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless WeldedProducts
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet&Tube

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Bridgeport,Conn.(10) S15	5.75	8.05	9.30	11.15	13.85
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.90	8.25	9.20	....	....
Detroit D2	5.90	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	....	...	9.30	11.45	14.15
Indianapolis C8	...	8.20	9.00	10.95	....
Mattapan,Mass. T6	6.30	8.35	9.30	11.45	14.15
NewBritn.,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pautucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill.(1) A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	10.95	13.25
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7	6.60	8.35	9.30	11.45	14.15
Worcester,Mass. T6	6.30	8.35	9.30	11.45	14.15
Youngstown C8	...	8.05	9.00	10.95	13.25
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. T6	....	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	....	...	12.85	15.35	18.35

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va W10	...	...	9.10	10.10	11.00
Brackenridge,Pa. A4	...	...	9.10	10.10	11.00
IndianaHarbor,Ind. I-2	8.025	8.50	9.10	10.10	....
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	...	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	...	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	...	...	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*†	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	...	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225†	9.25	9.85	10.85	11.75
Zanesville,O. A10	...	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.80	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.80	13.00	14.00
Zanesville,O. A10	11.95‡	12.50‡	13.00‡	14.00‡

C.R. COILS & CUT LENGTHS	T-100	T-90	T-80	T-73	T-72
Butler,Pa. A10	...	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	...	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower. ‖ Coils, ¾-cent higher.

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
Warren,O. R2	6.50
SparrowsPoint,Md. B2	6.60
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.10

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

WIRE

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.75
Aliquippa,Pa. J5	5.75
Alton,Ill. L1	5.925
Atlanta A11	5.95
Bartonville,Ill. K4	5.85
Buffalo W12	5.75
Chicago W13	5.75
Cleveland A7, C20	5.75
Crawfordsville,Ind. M8	5.85
Donora,Pa. A7	5.75
Duluth,Minn. A7	5.75
Fairfield,Ala. T2	5.75
Fostoria,O.(24) S1	5.95
Houston S5	6.15
Jacksonville,Fla. M8	6.27
Joliet,Ill. A7	5.75
KansasCity, Mo. S5	6.35
Kokomo,Ind. C16	5.85
LosAngeles B3	6.70
Minnequa,Colo. C10	6.00
Monessen,Pa. P7	5.75
Newark, 6-8 ga. I-1	6.40
No.Tonawanda B11	5.75
Palmer,Mass. W12	6.05
Pittsburg,Calif. C11	6.70
Portsmouth,O. P12	5.75
Rankin,Pa. A7	5.75
So.Chicago,Ill. R2	5.75
So.SanFrancisco C10	6.70
SparrowsPoint,Md. B2	5.85
Sterling,Ill.(1) N15	5.75
Sterling,Ill. N15	5.85
Struthers,O. Y1	5.75
Waukegan,Ill. A7	5.75
Worcester,Mass. A7	6.05

WIRE MB Spring, High Carbon	
Aliquippa,Pa. J5	7.20
Alton,Ill. L1	7.375
Bartonville,Ill. K4	7.30
Buffalo W12	7.20
Cleveland A7	7.20
Donora,Pa. A7	7.20
Duluth,Minn. A7	7.20
Fostoria,O. S1	7.20
Johnstown,Pa. B2	7.20
LosAngeles B3	8.15
Millbury,Mass.(12) N6	7.50
Minnequa,Colo. C10	7.45
Monessen,Pa. P7, P16	7.20
Muncie,Ind. I-7	7.40
Palmer,Mass. W12	7.50
Pittsburg,Calif. C11	8.15
Portsmouth,O. P12	7.20
Roebling,N.J. R5	7.50
So.Chicago,Ill. R2	7.20
So.SanFran. C10	8.15
SparrowsPt., Md. B2	7.30
Struthers,O. Y1	7.20
Trenton,N.J. A7	7.50
Waukegan,Ill. A7	7.20
Worcester A7, J4, T6, W12	7.50

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.90
Alton,Ill. L1	7.075
Buffalo W12	6.90
Cleveland A7	6.90
Donora,Pa. A7	6.90
Duluth,Minn. A7	6.90
Johnstown,Pa. B2	6.90
KansasCity,Mo. S5	7.50
LosAngeles B3	7.85
Minnequa,Colo. C10	7.075
Monessen,Pa. P7, P16	6.90
NewHaven,Conn. A7	7.20
Palmer,Mass. W12	7.20
Pittsburg,Calif. C11	7.85
Portsmouth,O. P12	6.90
Roebling,N.J. R5	7.20
So.Chicago,Ill R2	6.90
So.SanFrancisco C10	7.85
SparrowsPoint,Md. B2	7.00
Trenton,N.J. A7	7.20
Waukegan,Ill. A7	6.90
Worcester,Mass. A7	7.20

WIRE, Fine & Weaving(8" Coils)	
Alton,Ill. L1	11.375
Bartonville,Ill. K4	11.30
Buffalo W12	11.20
Chicago W13	10.55
Cleveland A7	11.20
Crawfordsville,Ind. M8	11.30
Fostoria,O. S1	11.30
Jacksonville,Fla. M8	11.73
Johnstown,Pa. B2	11.20
Kokomo,Ind. C16	11.20
Minnequa,Colo. C10	10.95
Monessen, Pa. P16	11.20
Muncie, Ind. I-7	11.40
Palmer,Mass. W12	11.50
Roebling,N.J. R5	11.50
So.SanFrancisco C10	11.55
Waukegan,Ill. A7	11.20
Worcester,Mass. A7,T6	11.50

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.90
Buffalo W12	9.90
Johnstown,Pa. B2	9.90
Minnequa,Colo. C10	10.025
Monessen,Pa. P16	9.90
Muncie,Ind. I-7	10.10
Portsmouth,O. D2	9.90
Roebling,N.J. R5	10.20
SparrowsPt.,Md. B2	10.00

ROPE WIRE (A)	
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.75
Johnstown,Pa. B2	9.75
Monessen,Pa. P7	9.35
Monessen,Pa. P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	*10.05*
SparrowsPt. B2	9.85
Struthers,O. Y1	9.75
Worcester J4, T6	6.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Portsmouth,O. P12	13.15
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
Kokomo,Ind. C16	8.05
FranklinPark,Ill T6	8.05
Massillon,O. R8	7.95
Monessen,Pa. P7, P16	7.95
Pawtkt.,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality (6 to 8 gage)	An'ld. Galv.
Ala.City,Ala. R2	6.90 7.30***
Aliquippa J5	6.90 7.425‖
Atlanta A11	7.00 7.55
Bartonville(48) K4	7.00 7.55
Buffalo W12	6.90 7.30†
Cleveland A7	6.90 ....
Crawfordsville M8	7.00 7.55
Donora,Pa. A7	6.90 7.30†
Duluth,Minn. A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Houston,Tex. S5	7.30 7.70†
Jacks'ville,Fla. M8	7.425 7.95
JohnstownB2(48).	6.90 7.45*
Joliet,Ill. A7	6.90 7.30†
KansasCity,Mo. S5	7.50 7.90†
Kokomo C16	7.00 7.40†
LosAngeles B3	7.85 ....
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45
Palmer W12	7.20 7.60†
Pitts.,Calif. C11	7.85 8.25†
Portsmouth,O. P12	6.90 ....
Rankin A7	6.90 7.30†
So.Chi'go R2	6.90 7.30***
S.S.Frn. C10	7.85 8.25**
Spar'wsPt.B2(48).	7.00 7.55*
Str'g(1)(48)N15.	6.90 7.45
Struthers,O.(48)Y1	6.90 7.40‡
Worcester A7	7.20 ....

* Based on 11c zinc; † 5c zinc; ‡ Less than 10c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga	Col.
Ala.City,Ala.R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga. J5	149‖
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala T2	146†
Houston,Tex. S5	154†
Johnstown,Pa.(43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	158†
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	154**
Monessen,Pa. 9 ga. P17	151
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	149

† Based on 5c zinc; * 11c zinc; ‖ 10c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
Houston S5	163
KansasCity,Mo. S5	167
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburg,Calif. C11	179
So.Chicago,Ill. R2	155
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed	Col.
Alabama,City,Ala. R2	159**
Aliquippa J5	156‖
Atlanta A11	164
Bartonville,Ill. K4	164
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	167†
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo S5	171†
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	165**
Monessen,Pa. P7	163
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
S.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	162

† Based on 5c zinc; * 11c zinc; ‖ 10c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	Stone	An'ld. Galv. Stone
Ala.City R2	13.15	14.70**
Aliquippa J5	12.50	14.30‖
Bartonville K4	13.25	15.10
Buffalo W12	13.15	....
Cleveland A7	13.15	....
CrawfordsvilleM8	13.25	15.10
Fostoria,O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	12.60	14.15†
Minnequa C10	13.40	15.10**
Palmer,Mas.W12	13.15	14.70*
Pitts.,Calif. C11	13.50	15.05†
So.Chicago R2	13.15	14.70
SparrowsPt. B2	13.25	15.10*
Sterling(1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	....

* Based on 11c zinc; † 5c zinc; ‖ 10c zinc; ** Subject to zinc equalization extras.

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	139
Houston,Tex. S5	145
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity, Mo. S5	149
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt., Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg) To dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock To dealers & mfrs. (7)	Col.
AlamabaCity,Ala. R2	138
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	140
Crawfordsville,Ind. M8	140
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	140
Minnequa,Colo. C10	143
Monessen,Pa. P7	138
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
So.Chicago,Ill. R2	138
SparrowsPt. Md. B2	140
Sterling,Ill.(1) N15	138
Worcester,Mass. A7	144

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	155
Moline,Ill. R2	155
So.Chicago,Ill. R2	150
Tonawanda,N.Y. B12	150
Williamsport,Pa. S19	150

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	13.5	list	17.5	0.25	20	2.75	21.5	4.25	21.5	4.25	20.75	3.5	23.25	6
Ambridge, Pa. N2 (††)	13.5	...	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3 (*)	13.5	2.25	17.5	3.25	20	5.75	21.5	7.25	21.5	7.25	20.75	6.5	23.25	9
Youngstown Y1 (††)	13.5	+1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	13.5	1.5	17.5	0.75	20	3.25	21.5	4.75	21.5	4.75	20.75	4	23.25	6.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	23.75	7.5	26.75	11.5	29.25	15	31.75	16	32.25	17
Alton, Ill. L1 (§)	...	...	....	...	....	....	21.75	6.5	24.75	10.5	27.25	14	29.75	14.75	30.25	15.75
Benwood, W. Va. W10 (††)	24	+2.5	15.25	+8.25	7.25	+14.25	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Butler, Pa. F6‡‡	25	+1.5	17	+6.5	9.5	+12	....	....	....	....	....	....	....	....	....	....
Etna, Pa. N2 (†)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Fairless, Pa. N3	...	...	....	...	....	....	19.25	...	22.25	...	24.75	...	27.25	....	27.75	....
Fontana, Calif. K1 (§)	...	...	....	...	....	....	10.75	+4.5	13.75	+0.5	16.25	3	18.75	3.75	19.25	4.75
Ind. Harbor Y1 (††)	...	...	....	...	....	....	22.75	7.5	25.75	11.5	28.25	15	30.75	15.75	31.25	16.75
Lorain, O. N3 (*)	...	...	....	...	....	....	23.75	13.5	26.75	17.5	29.25	21	31.75	20.5	32.25	21.5
Sharon, Pa. S4 (‡)	25	+1.5	17	+6.5	9.5	+12	....	....	....	....	....	....	....	....	....	....
Sharon, Pa. M6	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Sparrows Pt., Md. B2 (§)	23	+3.5	15	+8.5	7.5	+14	31.75	6.5	24.75	10.5	27.25	13	29.75	14	30.25	16
Youngstown R2 (**)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Youngstown Y1 (††)	...	...	....	...	....	....	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75
Wheatland, Pa. W9 (§)	23	+3.5	15	+8.5	7.5	+14	23.75	8.5	26.75	12.5	29.25	16	31.75	16.75	32.25	17.75

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.75	17.5	34.25	17.5	34.25	17.5	....	....	....	....
Alton, Ill. L1 (§)	30.75	16.25	32.25	16	32.25	16	23.25	6.75	23.25	6.75
Benwood, W. Va. W10 (††)	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Etna, Pa. N2 (†)	32.75	18.25	34.25	19	34.25	19	25.5	8.75	25.5	8.75
Fairless, Pa. N3	28.25	....	29.75	....	29.75	...	21	....	21	....
Fontana, Calif. K1 (§)	19.75	5.25	21.25	5	21.25	5	12.5	+4.25	12.5	+4.25
Ind. Harbor, Ind. Y1 (††)	31.75	17.25	33.25	17	33.25	17	....	....	....	....
Lorain, O. N3 (*)	32.75	22	34.25	20.5	34.25	20.5	....	....	....	....
Sharon, Pa. M6	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Sparrows Pt., Md. B2 (§)	29.75	15.5	32.25	15.5	32.25	15.5	23.5	6.25	23.5	6.25
Youngstown R2 (**)	32.75	18.25	34.25	18	34.25	18	25.5	8.75	25.5	8.75
Youngstown Y1 (††)	32.75	18.25	34.25	18	34.25	18	....	....	....	....
Wheatland, Pa. W9 (‡)	32.75	18.25	34.25	18	34.25	18	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), over 9c to 11c inclusive; (††), 10.50c-11.50c; (**), 9.50c; with discounts adjusted on price of zinc at time of shipment; (‡‡), 11c.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut length 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.96
2½	12	34.63	41.52	33.59
2¾	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Toe Rails 60 lb Under
Bessemer, Pa. U5	4.45	4.35	4.40	5.35
Ensley, Ala. T2	4.45	4.35	....	5.35
Fairfield, Ala. T2	....	....	....	5.35
Gary, Ind. U5	4.45	4.35	4.40	....
Huntington, W. Va. W7	....	....	....	5.35
Indiana Harbor, Ind. I-2	4.45	4.35	4.40	....
Johnstown, Pa. B2	....	....	...(16)	5.35
Lackawanna, N.Y. B2	4.45	4.35	....	5.35
Minnequa, Colo. C10	4.45	4.35	....	5.35
Steelton, Pa. B2	4.45	4.35	....	5.35
Williamsport, Pa. S19	....	....	....	5.35

TIE PLATES	
Fairfield, Ala. T2	5.275
Gary, Ind. U5	5.275
Ind. Harbor, Ind. I-2	5.275
Lackawanna, N.Y. B2	5.275
Minnequa, Colo. C10	5.275
Seattle B3	5.425
Steelton, Pa. B2	5.275
Torrance, Calif. C11	5.425

TRACK BOLTS (20) Treated	
Cleveland R2	11.50
Kansas City, Mo. S5	11.50
Lebanon, Pa. B2	11.50
Minnequa, Colo. C10	11.50
Pittsburgh O3	11.50
Pittsburgh P14	11.50
Seattle, Wash. B3	12.00

JOINT BARS	
Bessemer, Pa. U5	5.425
Fairfield, Ala. T2	5.425
Ind. Harbor, Ind. I-2	5.425
Joliet, Ill. U5	5.425
Lackawanna, N.Y. B2	5.425
Minnequa, Colo. C10	5.425
Steelton, Pa. B2	5.425

SCREW SPIKES	
Cleveland R2	11.00

AXLES	
Ind. Harbor, Ind. S13	6.75
Johnstown, Pa. B2	6.75

STANDARD TRACK SPIKES	
Fairfield, Ala. T2	7.30
Ind. Harbor, Ind. I-2, Y1	7.30
Kansas City, Mo. S5	7.30
Lebanon, Pa. B2	7.30
Minnequa, Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B3	7.80
So. Chicago, Ill. R2	7.30
Struthers, O. Y1	7.30
Youngstown R2	7.30

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great. Structural ½-in., larger 9.25; ⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	4
⅝-in. & ¾-in.	5
⅞-in. and larger	3
Longer than 6 in.:	
All diameters	+4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoes	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1¼", inclusive	60
1⅛" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex regular & heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" to 1⅛", inclusive	40
⅞" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS
(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages)

Plain finish	47.5—10
Plated finishes	30—10

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron:	Cents
98+% Fe, annealed	18.00
Unannealed	
Minus 100 mesh	14.50
Minus 35 mesh	10.25
Minus 20 mesh	10.00
Swedish, c.i.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	11.25
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	22.00
Annealed, 99.5% Fe	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Atomized, 500 lb drums, frgt. allowed:	
Carlots	32.00
Ton lots	34.00
Antimony, 500 lb lots	32.00*
Brass, ¼-ton lots	28.75-37.50†
Bronze, ¼-ton lots	31.00-39.00†
Copper:	
Electrolytic	13.50*
Reduced	13.50*
Lead	7.50*
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	89.50
Nickel-Silver, ¼-ton lots	45.75‡
Nickel-Silver, ¼-ton lots	48.50**
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.50*
Zinc, ¼-ton lots	18.25-32.00†
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	4.95
Less than 1000 lb	6.10
Chromium electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flat, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼" to 1 7/16"; 1 7/16" to 1 15/16" 4.75c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c H.S.-L.A.
(31) Base; deld. within mill county.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & heavier; 60" & narrower.
(38) 14 gage & lighter.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ gage.
(48) 6-7 gage.

STAINLESS STEEL MILL PRICES

(Representative prices cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	Shapes; H.R. & C.F. Bars; H.R. Strip	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	41.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	41.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	44.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	43.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	49.00	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	48.00	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	62.00	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	62.75	67.50	69.00	72.25	72.25
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	53.25	55.50	59.00	62.75	62.75
316L	....	....	52.50	....	58.25	61.00	64.25	67.75	67.75
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	77.00
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	80.25	80.25
321	22.75	29.50	35.25	40.75	41.00	42.00	46.00	50.50	50.50
330	....	....	58.00	....	....	68.50	70.00	72.75	77.75
347	24.50	32.25	39.50	45.75	46.50	44.75	51.25	59.25	59.25
403	....	....	27.00	30.75	....	33.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	34.25	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	36.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	35.25	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	50.25	39.50	40.75	50.75	59.75
501	....	....	14.00	14.50	21.25	16.00	18.25	29.00	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	30.00	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co., Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co., Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60-28.10	32.50-32.70	32.50	77.00
310	....	36.50	41.00	144.00
316	32.60-33.10	37.70-42.75	42.75	....
318	37.00-37.50	42.20-42.70	....	....
321	29.36-29.80	34.40-37.00	37.00	111.00
347	30.40-30.90	35.50-40.60	40.50	130.00
405	22.40-22.90	30.60-31.10	....	....
410	22.90-23.40	30.10-30.60	....	....
430	23.40	30.60	....	....
Inconel	46.90	61.90	....	165.00
Nickel	38.30	51.70	....	....
Monel	39.70	52.66	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base, Cold-Rolled 10%	Strip, Carbon Base, Cold-Rolled Both Sides	Strip, Carbon Base, Hot-Rolled 10%	Strip, Carbon Base, Hot-Rolled Both Sides
Copper*	28.85	35.85	25.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; Copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
19	4	2	12	...	3.990
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
18	4	1	5	...	2.250
14	4	2	5	...	2.185
13.75	3.75	2	5	...	2.185
13.5	4	3	....	...	1.805
9	3.5	....	....	...	1.115
6	4	2	....	5	1.045
6	4	3	....	8	1.290
1.5	4	1	....	8.5	0.990

Tool Steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON Gross Ton

F.o.b. furnace prices in dollars per gross tons, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	52.38	52.88	....	....
Birmingham U5	....	52.88	56.50†	....
Gadsden, Ala. R2	52.38	52.88	....	....
Woodward, Ala. W15	52.38	52.88	56.50†	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda, N.Y. W12	56.00	56.50	57.00	....
No. Tonawanda, N.Y. T9	....	56.50	57.00	57.50
Boston, del.	66.65	67.15	67.65	....
Rochester, N.Y., del.	59.02	59.52	60.02	....
Syracuse, N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R-2	56.00	....	56.50	....
Gary, Ind. U5	56.00	....	56.50	....
Indiana Harbor, Ind. I-2	56.00	....	56.50	....
So. Chicago, Ill. W14, Y1	56.00	56.50	56.50	....
So. Chicago, Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon, Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron, O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain, O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem, Pa. B2	58.00	58.50	59.00	59.50
New York, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Birdsboro, Pa. B10	58.00	58.50	....	....
Chester, Pa. C31	48.00	48.50	49.00	....
Philadelphia, del.	49.66	50.16	50.66	....
Steelton, Pa. B2	58.00	58.50	59.00	59.50
Swedeland, Pa. A3	58.00	58.50	59.00	59.50
Troy, N.Y. R3	58.00	58.50	59.00	....
Pittsburgh District				
Neville Island, Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, del.	57.37	57.87	57.87	58.37
McKeesRocks, del.	57.04	57.54	57.54	58.04
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	58.66
Verona, Trafford, del.	58.19	58.69	58.69	59.19
Brackenridge, del.	58.45	58.95	58.95	59.45
Bessemer, Pa. U5	56.00	....	56.50	57.00
Clairton, Rankin, So. Duquesne, Pa. U5	56.00	....	....	....
McKeesport, Pa. N3	56.00	....	....	57.00
Midland, Pa. C18	56.00	....	....	....
Monessen, Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard, O. Y1	....	....	56.50	....
Sharpsville, Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield, O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie, Pa. I-3	56.00	56.50	56.50	57.00
Everett, Mass. E1	60.50	61.00	61.50	....
Fontana, Calif. K1	62.00	62.50	....	....
Geneva, Utah C11	56.00	56.50	....	....
Granite City, Ill. G4	57.90	58.40	58.90	....
Ironton, Utah C11	56.00	56.50	....	....
LoneStar, Texas L6	52.00	52.50*	52.50	....
Minnequa, Colo. C10	58.00	59.00	59.00	....
Rockwood, Tenn. T2	....	52.50*	56.50	....
Toledo, O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....

* Low phos. southern grade. † Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.00 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson, O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

Niagara Falls, N.Y. P15	$80.50
Keokuk, Iowa, Openhearth & Fdry, freight allowed K2	85.00
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00
Wenatchee, Wash. OH & Fdry, freight allowed K2	85.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Rockwood, Tenn. T3	70.00
Steelton, Pa. B2	64.00
Philadelphia, del.	67.55
Troy, N.Y. R2	64.00

each a

first quality

tool steel

guaranteed by deep etch, magnaflux, zyglo and supersonic testing

High Speed Steels

Red Cut Superior ‡
E. V. M.
Red Cut Cobalt
Red Cut Cobalt B
Gray Cut Cobalt
Vasco M-2 ‡
Van-Lom ‡
8-N-2 ‡
Neatro ‡
Vasco Supreme ‡
Van Cut

Die Steels for Hot Work

Hotform
Choice
Marvel
Hotpress
Forge-Die
SC Special
WW Hotwork
Red Cut Superior ("J" Temper)

Die Steels for Cold Work

Non-Shrinkable
Colonial No. 6
Air Hard
Crocar ‡
Ohio Die
Red Star Tungsten
Colonial No. 4

Carbon and Carbon-Vanadium Tool Steels

Colonial No.14
Colonial No. 7
Extra L
Elvandi
Red Star Tool
Red Star Vanadium

Chrome Vanadium Tool Steels

Vanadium Types D-G-H-K-N
Vanadium Type BB

Tool Steels for Special Purposes

Colhed
Par-Exc
Silman
Mosil
CM
Croman
Nikro M
Speed-Cut

Drill Rod

Red Anchor
Blue Anchor
Gold Anchor
Oil Hardening
Carbon-Vanadium
Red Star Tungsten
Special Analyses

Cold Drawn Shapes

Special Steels

Our Tool Steels are produced in every form, including hammer-finished bars and blocks, disc and ring forgings, standard and special hot rolled shapes and cold drawn shapes, plates, sheets, rings punched from plate, and tool bits.

‡ These grades also available in Free Machining (FM) Type.

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham, St. Paul, 15 cents; Boston, Philadelphia, New York, 10 cents; Seattle and Spokane, Wash., no charge; at Buffalo and Philadelphia, on cold-finished bars and sheets, alloy bars and galvanized sheets, 25 cents.)

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡§	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.§	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.22	7.51	7.77	....	6.89	...	6.88	8.52[4]	12.04	6.92	6.57	7.96**
Birmingham	6.35	7.35	8.25[3]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	44.78[3]	7.47	...	7.20	8.60	12.45	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.85	12.15	6.77	6.70	7.80
Carnegie, Pa.	6.38	...	8.30	....	6.72	...	6.51	7.85	12.15	6.72	6.65	6.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	45.55	6.62	...	6.51	7.50	11.90	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.25	45.80	6.86	...	6.75	7.80	12.15	6.86	6.81	7.89
Cleveland	6.38	7.38	8.45	45.66	6.72	...	6.57	7.60	11.96	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.79	12.10	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7.35	7.80	9.93	....	7.70	9.30	7.70	9.50	....	7.35	7.35	8.75
Los Angeles	7.40	9.25	9.80	50.15	7.75	11.75	7.35	10.05	13.20	7.55	7.35	9.45
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.99	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	....	6.81	6.87	....
New York	6.97	7.91	8.79	44.45	7.56	...	7.37	8.73[4]	10.53	7.38	7.27	8.48
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.29	8.08	41.98[3]	6.96	8.80	6.74	8.19[4]	11.96	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	45.50	6.72	...	6.51	7.85	11.90	6.69	6.52	7.64**
Portland, Oreg.	7.60	8.75	9.70	48.60	7.85	...	7.55	10.95	14.00	7.50	7.45	9.35
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.08	6.65	8.06
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.89	12.19	7.09	6.81	7.93
St. Paul	7.03	8.03	8.96	....	7.28	...	7.16	8.26	....	7.12	7.19	8.30
San Francisco	7.55	8.95	9.35	48.15	7.80	...	7.35	10.05	13.20	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	50.50	8.20	...	7.80	10.95	13.65	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	8.30	...	7.80	10.85[3]	14.40	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡includes 35-cent special bar quality extra; §as rolled; **¼-in. and heavier; ††as annealed. ‡‡Prices include $2 for crating; Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston where base is 10,000 lb. [2]—500 to 9999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lbs; [6]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

Warehouse Business Turns Upward

August volume not only exceeds the low level of July but tops the more "normal" month of June by 10 per cent. Sales advance on a broad front

Pittsburgh—Distribution continues to improve rapidly from the July low. August sales were about 20 per cent above July levels, about 10 per cent better than in June. Only distributors reporting decreased business were several with midsummer inventory-taking in August. Sales are advancing on a broad front. While there is slight gain in sheet and plate, structurals and cold-finished bars are improving. Demand for galvanized sheet has been so brisk that delivery is delayed in some cases.

Philadelphia — Improved tone in warehouse sales is being felt in total volume, tonnage and number of orders. Distributors now find they can quote standard prices and get some business. Orders are not all from big accounts either. One warehouse official estimates his company's August volume will top June by 10 per cent and July by more than that. Buying from mills is on a replacement pattern as distributors have sufficient inventory with surplus in fewer lines than a month ago.

New York — Warehouse volume this month will be about a standoff with July. All products move slowly with individual orders small; cold-rolled sheets are notably slack. Most plate buying is for fabricated material, although cutting and shearing departments are not near capacity. Distributors are holding mill orders to replacements on monthly basis.

Chicago—Steel sales from warehouses are off sharply from a year ago, but current volume is holding better than mill sales. August will compare favorably with July and likely will register a small gain. Further upturn is the forecast for September.

Boston—Steel demand from warehouses this month approximates the July level, orders during the last half being somewhat better than in the first half. One costly factor is the

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast*
Deformed Bars, Intermediate, ASTM-A-305	$4.95	$4.95	$4.85	$5.23
Bar Size Angles	4.65	4.65	4.55	4.93
Structural Angles	4.65	4.65	4.55	4.93
I-Beams	4.50	4.50	4.40	4.73
Wide Flange Beams	4.80	4.80	4.80	5.08
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.50	5.50	5.45	5.78
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.80	27.00	26.80	27.60
Barbed Wire	6.00	6.00	6.00	6.23
Merchant Bars	5.00	5.00	5.00	5.33
Hot-Rolled Bands	5.15	5.15	5.10	5.43
Wire Rods, Thomas Commercial No. 5	5.00	4.87	4.85	5.12
Wire Rods, O-H, Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Bright Common Wire Nails, 8d	6.85	6.95	6.90	7.15

*Not including $2.20 per net ton customarily charged in most West Coast ports for wharfage and handling.

Sizes OD				
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.80/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

small size of the average order. Buying is slightly stimulated by fill-in orders from fabricating shops which are resuming operations after vacation suspensions. Distributors are highly competitive for orders in sight and their position is not made smoother by mills taking combination orders for various products, ranging downward to under 5000 lb for some items.

Cincinnati — Competition between mills and warehouses for 3, 4 and 5-ton-orders is probably greater today than at any time in the last year. The constant demands for immediate delivery indicate that industrial inventories of steel are down to a bare subsistence level. Any pick-up in business seems certain to be reflected in improved warehouse and mill sales.

San Francisco—Distributors here describe current business as "fair to good." Most of the buying is in galvanized sheets, structurals and oil country goods.

Los Angeles—Distributors expect the current slump in activity to end this fall. They see no connection between lagging sales and recent price increases. Large mid-summer inventories and plant vacation shutdowns are prime factors.

Steel Bars . . .

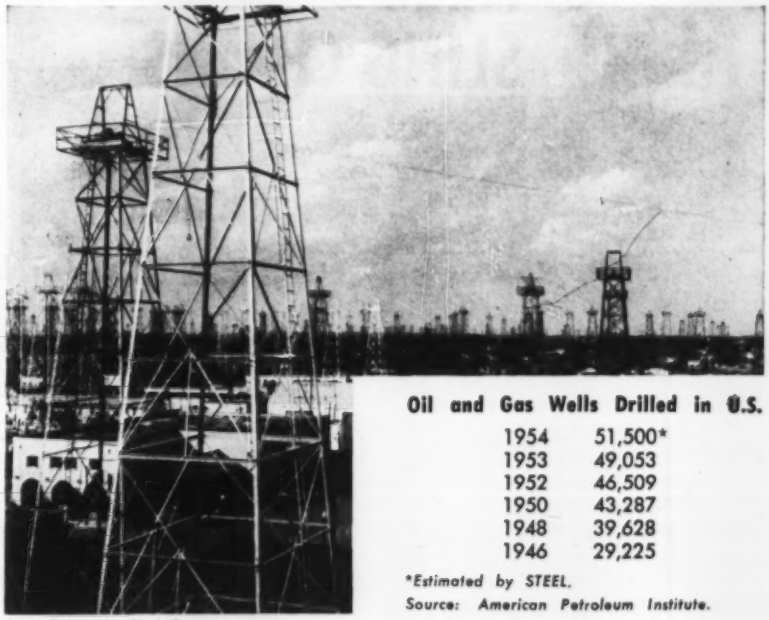
Bar Prices, Page 106

Boston—Demand drags for bars in all classifications. Orders are meager from all classes of customers, including warehouses, yet an upturn in bar volume might well be the first experienced in view of consumers' low inventories and their prospective volume of fourth-quarter business.

New York—September delivery is still possible in most hot-rolled and cold-finished carbon and alloy bars, but sellers expect deliveries to stiffen gradually into September and October. Such large consumers of steel bars as cold drawers and fastenermakers are operating at about 65-70 per cent of capacity.

Philadelphia — Cold carbon bars are perking up a bit, though alloy bars remain slow. Cold drawers report backlogs into October generally, but can make room for some orders in September. They are placing orders with mills in good volume and with more regularity.

Pittsburgh—Barmakers continued to fill August orders until the last week in the month, but business was slow. Now several appliance producers have completed model changeovers. Their renewed orders should increase September sales.



Jones & Laughlin Steel Corp.

Oil and Gas Wells Drilled in U.S.

1954	51,500*
1953	49,053
1952	46,509
1950	43,287
1948	39,628
1946	29,225

**Estimated by STEEL.*

Source: American Petroleum Institute.

Oil, Oil Everywhere: Steelmen Are Happy

THERE'S a familiar ring in sales reports this year in the often-repeated statement that "oil country tube production remains near capacity at all producing points."

Nine producers of tube products for oil country use say this happy condition will prevail well into the fourth quarter. Order books are now open for that quarter, and sales managers are beginning to form an opinion of demand in the last three months.

Confidence—Predictions are cautiously optimistic. "Our books are filling up well and we see no decline in second-half business compared with first half," say sales managers at National Tube Division of U. S. Steel Corp.

"Fourth-quarter sales won't differ greatly from third quarter," reports National Supply Co., Pittsburgh. "We expect to work at capacity most of the fourth quarter," says Pittsburgh Steel Co., of that city.

Steady Drilling—A constantly high rate of well drilling keeps oil country production close to capacity. According to American Petroleum Institute, number of new wells drilled rose from 29,225 in 1946 to 39,015 in 1949. New wells drilled increased to 46,509 in 1952 and 49,053 in 1953. That trend continues. Estimates of well drilling this year average about 51,500.

Oil country goods compose 3.7 per cent of finished steel products shipped this year, compared with 2.4 per cent last year. American Iron & Steel Institute statistics show mill shipments of oil country goods setting the following pattern:

(Net tons)

1954—2,450,000*	1951—1,879,216
1953—2,019,345	1950—1,692,821
1952—1,610,132	1949—1,365,982

*Estimated.

Definition of Terms—Oil country tubular goods—a collective term—applies to casing, drill pipe and tubing, AISI points out. Line pipe is classified separately although it is used by the oil industry. Casing holds tubing and keeps out underground fluids. Tubing conducts oil to the surface while drill pipe transmits power from ground level to a rotary drilling instrument. Tubing is either seamless, lap-weld or electric-weld. Between 85 and 90 per cent of the total is seamless.

While new well starts in the second half will nearly equal first-half totals, they may decline next year. Tubemakers fear a possible decrease in price of oil could discourage drilling. Together with entry of two new oil country goods producers, selling is growing more competitive, although freight absorption is not yet prevalent.

New Firms—Lone Star Steel Co., Dallas, and Colorado Fuel & Iron Corp., Denver, began production of

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oil country goods late last year. CF&I's Pueblo, Colo., mill, opened in October, 1953, has annual capacity of 175,000 tons. Another producer, Republic Steel Corp., Cleveland, is continuing to expand its seamless tube capacity.

The slight decline in new drilling, together with increased average depth per well, causes change in the sales pattern. As wells become deeper, need is for thicker tube walls and increased pressure resistance. Thicker tube products are seamless and need grows for that type. A midwestern producer says sales are growing in nickel and chromium alloy tube used in high-pressure applications. At the same time, sales decline in carbon steel grades used nearer the surface.

European Shipments—A new competitive influence along the seaboard is foreign tonnage. From Great Britain, Germany, Italy and France, oil country tube salesmen compete with Americans.

Despite this growing competition, tubemakers think world requirements of oil should continue their steady upward progress. Shipments of tube products to that industry should remain a bright spot in the market picture.

Plates . . .

Plate Prices, Page 106

Chicago — Plate fabricators are whittling down their work backlogs, but remain optimistic for the future. Some pickup in new business is anticipated in fourth quarter. Mill deliveries are easy, with sheared plates, universal mill and floor plates all available on two-weeks' notice.

Boston—Delivery and, to some extent, price are factors in placing plate orders. Practically every inquiry is accompanied by pressure for prompt shipment. Most tonnage is placed with competitive eastern mills whose delivered costs cover a $2 to $3 spread. The leading Pittsburgh producer is not equalizing on plates.

Plate shops are not anticipating requirements and are placing frequent orders with the main consideration being delivery to meet operating schedules.

Philadelphia — Plate fabricators' business is running about 25-30 per cent behind a year ago. Railroads and shipyards must start buying before a significant change can be expected.

Pittsburgh—Most construction is in projects using small quantities of plate, making industrial use of this product slow. Declining defense de-

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mand is causing more firms to compete for few construction contracts.

New York—Pipeline projects pending promise to shore up plate mills before long, though present operations are slack.

Sheets, Strip . . .

Sheet and Strip Prices, Page 106 & 107

Weirton, W. Va.—Effective with shipments Aug. 19, Weirton Steel Co. changed price of three grades of cold-finished spring steel strip. Two prices constituted an increase while one price was decreased. New prices are listed on page 108.

Chicago — Requirements for galvanized sheets outpace every other flat-rolled product in intensity. A combination of circumstances assures galvanizing facilities running full capacity at least through November.

Boston—At first sign of extended deliveries look for heavier buying. When mills build up any backlog, consumers will show more interest for a position on rolling schedules. This may develop in the latter part of September for October delivery. As long as they can bargain for shipment within two to three weeks, or even less, not much forward buying can be expected.

New York—Consumers show increased interest in coated and electrical sheets, but not in hot-rolled and cold-rolled carbon sheets. Subcontractors of automakers are not back in the market yet. Sheet fabricators, such as makers of lockers and kitchen cabinets, are starting to buy steadily for the first time this year and sellers believe their inventories are finally trimmed to size.

Philadelphia—Order entry rate indicates district sheet sales will improve with the fall production push. Inquiries coming in are from a wide variety of customers, some for good tonnages and spread out over the fourth quarter. Automotive suppliers and some appliance manufacturers are reported more active. New models of refrigerators and washing machines could have an effect. Orders of galvanized sheet for pipe and gutter and air-conditioning uses have extended deliveries even further, with some buyers taking excess items though they lose on cutting.

Pittsburgh—Dullness in flat-rolled steel extends into September. An advance may come in the fourth quarter with increased automotive requirements. Probably no other market influence can favorably affect sales this month.

Cincinnati—Mill delivery on galvanized sheets has been extended to October and November due to the increased demand for government grain bins. Demand for cold-rolled sheets is spotty. Secondary grades of this product continue to show price weakness.

St. Louis—Receipt of orders by mills for sheet steel remains low, but a better market undertone is emerging. In this district, much of the current mill demand is from the construction and oil field industries. Appliance lines continue dormant, with agriculture a trifle better.

Wire . . .

Wire Prices, Page 108

Boston—Mild improvement in orders for finished wire in late August has been accompanied by pressure for prompt delivery. Bookings for September scheduling are light. Wire consumers, notably users of heading stock, are not buying ahead. In many instances, fabricators of finished products are uncertain as to extent and type of goods required for fourth quarter.

New York—Slight improvement in

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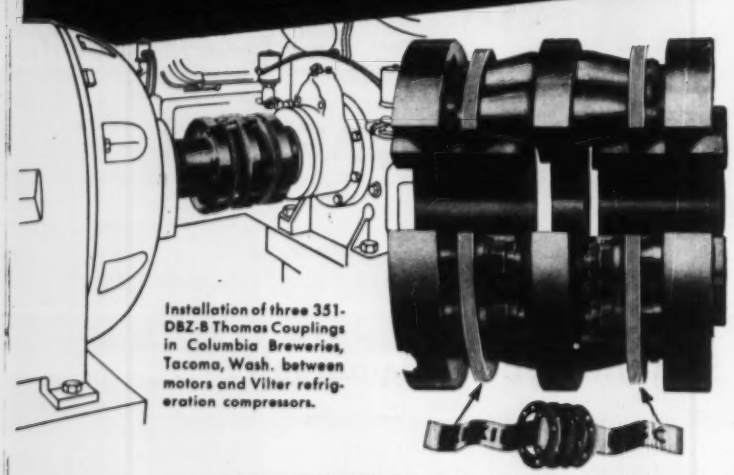

Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

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NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.

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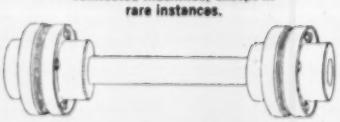

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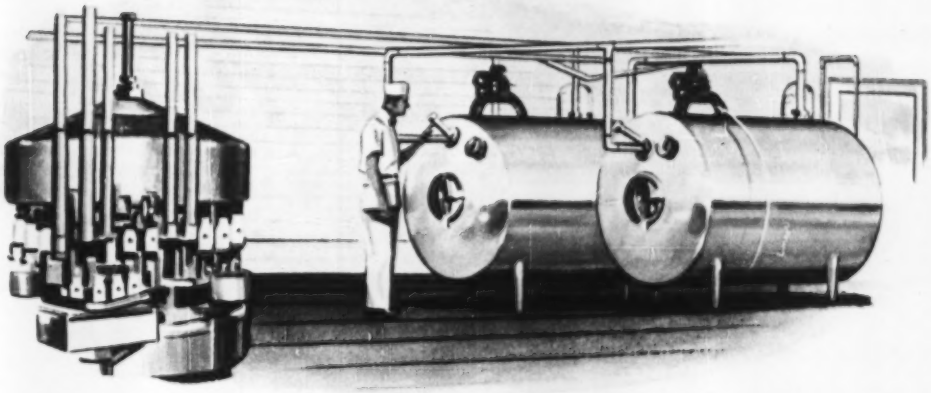

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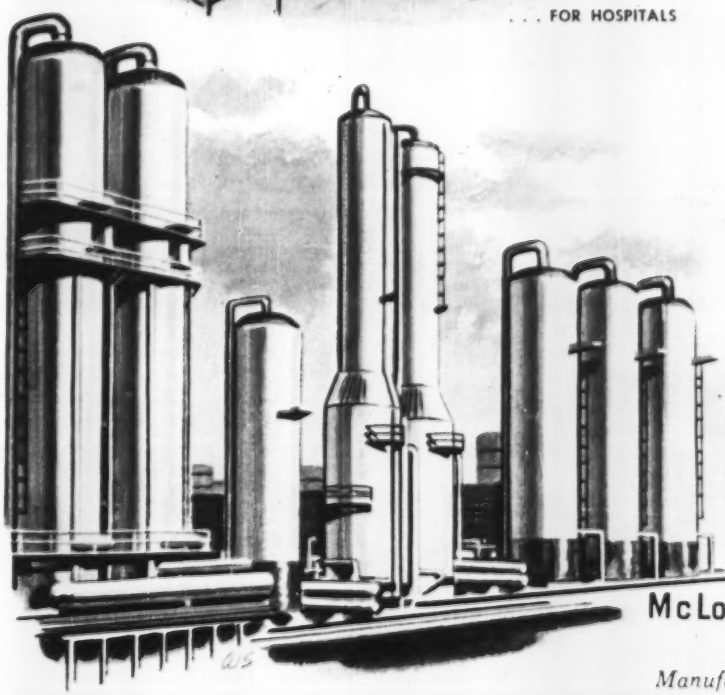

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Pig Iron . . .

Pig Iron Prices, Page 110

Philadelphia—With foundries operating at 70-80 per cent of capacity for the most part, and many less than that, pig iron demand in September likely will be slow, like August, but better than July. One large district foundry has placed an order for 6000 tons of iron for delivery over the next four months. Foreign pig iron price here is up 50 cents a gross ton, with lowest reported price on foreign pig iron being $52 a ton.

Boston—Future outlook for this district as a basic iron user is clouded. The largest consumer, at Worcester, will not be a factor since it is closing its open hearths, while melt at the Bridgeport, Conn., steelworks has for many months been almost exclusively scrap. At the moment, Washburn Wire Co., Phillipsdale, R. I., is the most attractive consumer.

Foundry melt shows a slight gain and most shops under contract with the district producer are not taking in full tonnage.

New York—Blast furnace production in July dipped to 4,626,184 net tons, a decrease of 97,966 tons from the preceding month. That makes total production of 33,817,866 tons so far this year, well below the 44,830,036 tons produced through the first seven months of 1953.

Pig iron accounts for 4,590,076 tons of the July total, and ferromanganese and spiegeleisen make up the remaining 36,108 tons. Both figures represent decreases from June production.

Buffalo—Merchant pig iron market continues to drag. Building and allied casters are still active buyers. Automotive lines have slackened. Ingot production is taking nearly 90 per cent of current iron output.

Cleveland—American Steel & Wire Division of U. S. Steel Corp. shut down its D-6 blast furnace at its Central Furnaces & Docks Works, this city, for relining. Construction of its 1350-ton blast furnace is nearing completion and is expected to be lighted in mid-September.

Chicago—Pig iron demand experiences little change as far as jobbing foundries are concerned, but captive shops affiliated with automotive and farm equipment firms are taking increasing amounts.

St. Louis—Pig iron production holds at half-capacity. Operators predict no increase in the foreseeable future. Foundry iron output has been at a standstill for months, but ground stocks continue ample for demand.

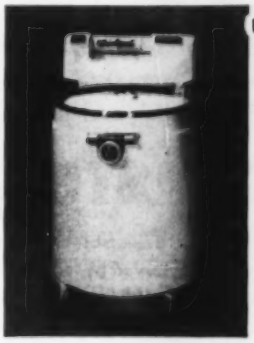
Seattle—Foundry operations are above normal. Their order backlogs are fair. Materials are in good supply with No. 1 cupola quoted at $34-$35. Some Australian pig iron is on order for this area, although South Africa pig is arriving in monthly installments for one of the larger consumers which is covered by contract to the end of the year.

Structural Shapes . . .

Structural Shape Prices, Page 106

Boston — Mounting estimates on fabricated structural steel include about 8000 tons for an insurance company building in Hartford, Conn. Bids are in with the owner at 3000 tons while an additional 5000 tons will be bought this fall.

Philadelphia—Structural fabricators are collecting small jobs which aggregate a tidy total. Inquiries are spread out over a variety of activities; nearly all work is nongovern-



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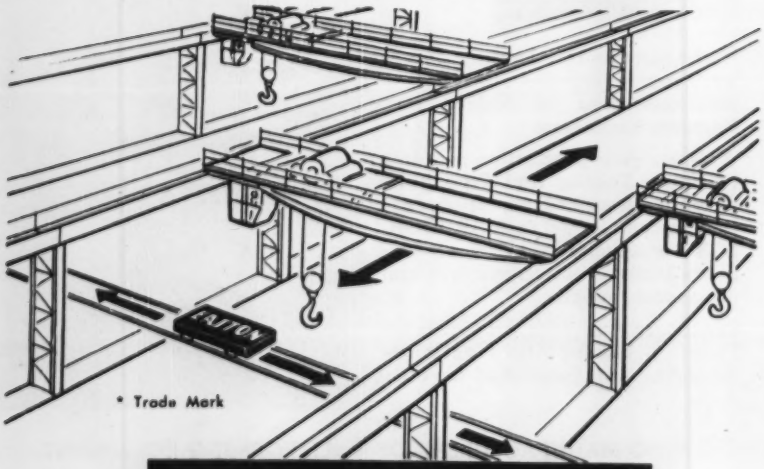

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mental. Most good tonnages appearing are for bridges.

Los Angeles—With fall construction projects booming, structural producers report their year-long slump is over. Recent requests for building permits are at a yearly high.

Tubular Goods . . .

Tubular Goods Prices, Page 100

Pittsburgh—Order books are open for the fourth quarter in oil country tubular goods, and producers report books filling well, although more slowly than in earlier quarters. Butt-weld sales are still regarded as fairly good. Seamless sales are fair, with rapid delivery all-important.

Boston—Butt weld pipe orders are up 10 to 20 per cent for August, a large part of tonnage being shipped from stock by producers. Seamless volume is lower because of decline in direct shipment orders. Demand for mechanical and pressure tubing is slow.

Los Angeles—With producers re-entering this district, competition for business is keen. When tubular goods were in short supply early in the year, several distributors withdrew from the market. Now, however, the increased availability of tubes has brought them back again.

Tin Plate . . .

Tin Plate Prices, Page 103

Chicago — Consumption of tin plate holds at a high rate and its production is one of the bright points in the current steel picture. One maker here is quoting October delivery. Some of the tightness can be traced to the new use of tin plate for packaging soft drinks.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 106

Pittsburgh—General high rate of construction guarantees heavy demand for reinforcing bars, but sales are split among a growing number of producers. Several barmakers recently converted to production of reinforcing bars. Result is that steelmakers can readily fill all reinforcing bar requirements.

Chicago—Requirements for reinforcing steel are bolstered by new awards for both public and privately financed work. Latest in the series of contracts for the former were last week's $2.5-million for work on the Calumet Expressway in Southern County, Illinois. Construction will start this fall and continue into 1955.

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The first time you call him, you'll discover you're getting something *more* than "just steel service". For he is backed by a MILL-BRANCH WAREHOUSE organization. It embraces "trouble-shooting service" right in your own plant. It is backed by trained delivery crews and modern equipment to process orders, fast.

Most important—it is *part and parcel* of the specialty Mill in Reading. Every time you call your Carpenter MILL-BRANCH WAREHOUSE you benefit from Mill Laboratory and Metallurgical Help, Mill Quality Controls—*comprehensive Mill Service.*

Truly, it's almost like having a *specialty* steel Mill right next to your receiving dock!

Whenever you want specific job recommendations or help with a problem, get it by calling Carpenter. Try it and see. Simply pick up your phone and talk to the man on the order desk at your nearest Carpenter MILL-BRANCH WAREHOUSE or Distributor. He'll put you in touch with the person who can help you. The Carpenter Steel Co., 139 W. Bern St., Reading, Pa.

Carpenter STEEL

Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C7% approx.). Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract $2.00 for each 1% or fraction thereof of contained managanese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb or alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max, 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 10.8c per pound of contained silicon; 1" x down, bulk 25.25c per pound of contained chromium plus 11c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14; less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 25-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 10.80c per lb of contained Si, carload packed 12.40c, ton lot 13.85c, less ton 15.5c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 12.2c per pound contained silicon; carload packed 13.55c; ton lots, 14.75c; less ton, 16.1c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.8c per lb of contained Si, carload packed 15.1c, ton lot 16.25c, less ton 17.5c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.3c per lb of briquet. Packed c.l. 7.10c, ton lot 7.9c, less ton 8.8c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.45c. Packed c.l. 7.25c, ton lot 8.05c, less ton 8.95c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2¼ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $9.50 per lb of contained Cb, less ton $9.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D. $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicas Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

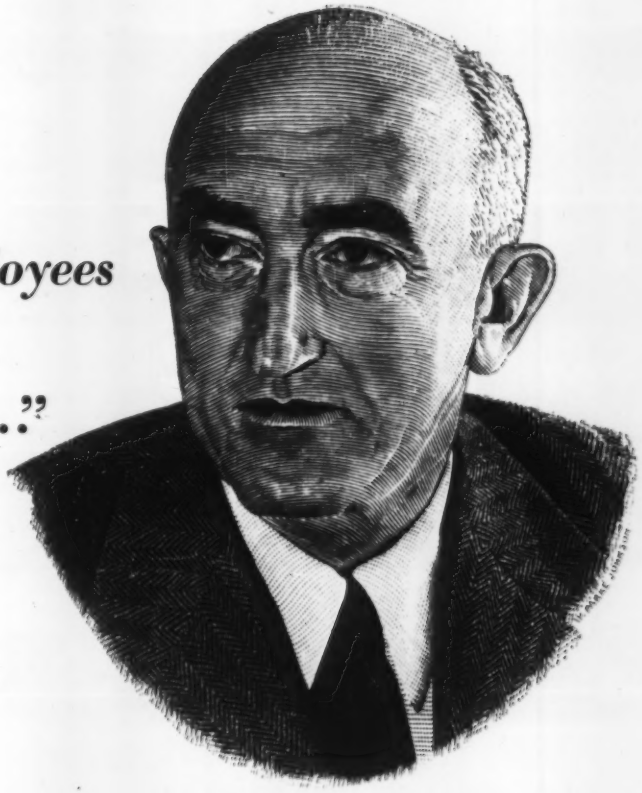
Simanal: (Approx. 20 % each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, Pa., $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

"Boeing's 59,000 employees feel closer to the company..."



WILLIAM M. ALLEN
President
Boeing Airplane Company

"Boeing's 59,000 employees feel closer to the company since our recent successful person-to-person payroll savings drive in the Seattle and Wichita Divisions. Through letters and personal observations many employees have told us they have a greater sense of being a part of the company—that Boeing is interested in the welfare of each and every man and woman on the payroll."

That's the way it is with Payroll Savers. With the realization that systematic investment in U. S. Savings Bonds is a sure road to the down payment on a home, comfortable retirement, or other objectives, comes a better appreciation of a man's job and his company.

To most Payroll Savers, a day's absence from work means just that much out of his take-home savings. And he no longer takes chances, because he wants to stay off the accident list. He looks for better and quicker ways to do his job—promotion will mean more dollars for Savings Bonds. As a stockholder in America he takes a better interest in national affairs, the sound dollar, and economic stability.

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If less than 60% of your employees are Payroll Savers, do something about it. A phone call, telegram or letter to "Savings Bond Division, U. S. Treasury Department, Washington, D. C.," will bring prompt assistance from your State Director, U. S. Treasury Department. He will help you install, or revitalize a Payroll Savings Plan, through a simple, person-to-person canvass which your employees will be glad to conduct.

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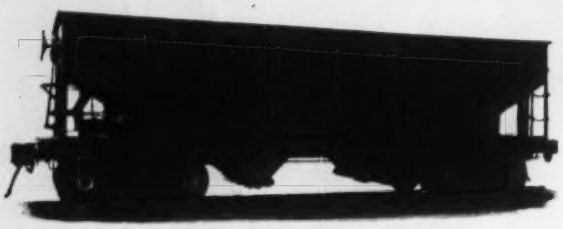

50 TON TWIN CENTER DUMP HOPPER CAR

These all-steel cars are in excellent condition with all new bodies and center sills having been applied within the last ten years. Cars feature pressed steel hopper doors with Wine-type door locks and all modern attachments. They are well suited for mainline interchange or intraplant service. Prompt delivery.

PRINCIPAL SPECIFICATIONS

Capacity, Nominal	100,000 Lbs.
Load Limit, Average	131,000 Lbs.
Light Weight, Average	38,000 Lbs.
Length, Inside	30 Ft. 5 In.
Height, from Top of Rail	11 Ft. 1 In.
Width, Inside	9 Ft. 6 In.
Width, Extreme	10 Ft. 2 In.
Capacity, Level Full	1,683 Cu. Ft.

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Ren-ite*, the great dimensionally stable tooling plastic, has been tested and proved by years of research and development. The Ren-ite organization offers unrivaled facilities to help industry cut up to 70% tooling time and 50% of costs.

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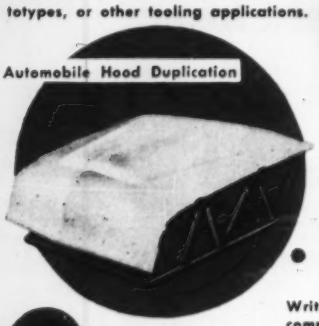
Automobile Hood Duplication



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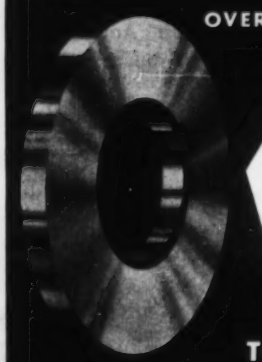

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ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

Runners

Reesdale, Pa. $174; Johnstown, Pa., $177.50; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $262.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburner bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-$15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	28.00
Terre Haute, ovens	24.05
Milwaukee, ovens	26.25
Indianapolis, ovens	24.25
Chicago, deld.	28.13
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.06
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.63
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net ton, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

ELECTRODES

(Threaded with nipple, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	20.00
N. African hematite (spot)	nom. 20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, good commercial quality	$24.00-$25.00
Domestic scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, $1.02-$1.05 per long ton unit c.i.f. U. S. ports, duty for buyer's account: 46-47%, 93c-95c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	nom. 34.00

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mo content mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$3.80-$4.20
60-65%	4.65-4.75

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills

Domestic	31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill. Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, Niles, O., Hays, Pa., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala. $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Peria, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

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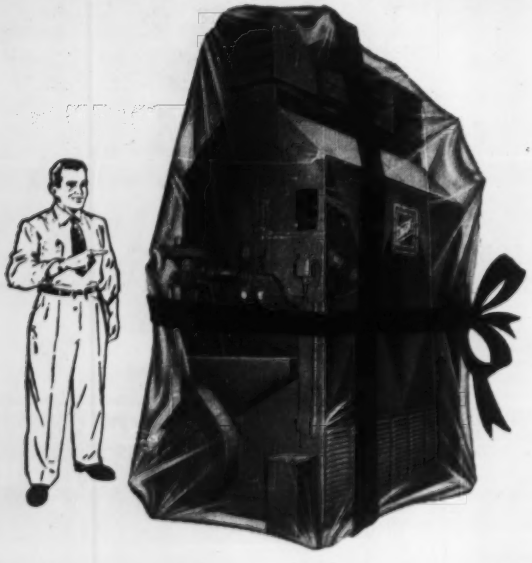

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Exports Sustain Scrap Market

About 75 per cent of current scrap shipments are going abroad. With ingot production at a slow pace, domestic mills show little buying interest

Scrap Prices, Page 128

Philadelphia—About 75 per cent of current scrap shipments are going to export markets. An estimated 24,000 tons have left this port since the boom started and the outgo is expected to continue beyond September, perhaps for the balance of the year. Domestic mills are not showing much buying interest.

Domestic scrap buying price is actually the export price minus the difference in freight; $2.50 is the average freight to the mill, but there's a 50-cent-per-ton switching charge from producer to the pier, making the differential $2 and the average export price $26. For this reason No. 1 grades, delivered to consumers' plants, are now quoted in a range of $27-28 rather than a flat $27.50.

Boston—Not only has export demand depleted yard stocks of heavy melting steel scrap, but some yards are oversold and are paying higher prices. At dock, No. 1 steel scrap brings $24 and No. 2 up to $21. Both of these levels are too high for Pennsylvania shipment at current domestic steelworks' offers. More than 2000 tons for export have now cleared or are being loaded. With freight a factor, most export tonnage is shipped from yards within a 50-mile range of port.

New York—Activity in steel scrap centers mostly in buying for export with prices slightly firmer with some influence on grades moving to dock in limited volume. Lighter grades, borings and turnings, are stronger. Domestic buying is slow, but tonnage being moved from yards for export is steadily lowering inventories.

Buffalo—Scrap market here maintains strength as mid-state and eastern receipts are light due to heavy movement for export. In fact, dealers covering orders on books find supplies limited. Shipments of top-quality material to Valley consumers also support the market. Mills still have orders outstanding and are not placing new ones.

Pittsburgh—While higher prices are quoted on quality lots of scrap, prices remain largely unchanged. Brokers reflect a more optimistic tone, but buyers have been out of the market for several weeks. Volume sales are still lacking.

Cleveland—Leading consumer in this district, with mills in Cleveland and the Valley, will be out of the scrap market for open-hearth and electric furnace grades during the entire month of September. This is attributed to ample inventories and curtailed operations. The market is supported by outside factors, especially the demand for export, and prices remain unchanged.

Cincinnati—No. 1 railroad heavy melting and random length rails both advanced $1 a ton to new levels of $31-$32 and $36-$37, respectively. Prices of other scrap items remained the same. There is a better tone to the market, but it is based largely on strength in other areas. Buying continues to be limited.

Detroit—Scrap prices remain unchanged though observers expect a slight upturn as the generation of automotive scrap diminishes during model changeover.

Chicago — Scrap market here is static. Low volume of buying induced by the lowest steelmaking rate this year coupled with no indication of substantial pickup for several weeks contribute to the status quo. Feeling is that another month will elapse before heavier scrap use and buying can be expected.

St. Louis—Continuing shortage in railroad scrap has edged prices upward again, with brokers posting buying quotes on railroad heavy melting and 18-inch rails $1.75 and $1 higher, respectively. Most pressure is from mills which prefer to limit their small purchases to quality scrap. There is no evidence yet of normal winter stockpiling, but yards are piling up, for speculation, all they can get without boosting bids.

Los Angeles—Collections of steelmaking grades of scrap are lower. With freight prices from interior points rising, some buyers are absorbing a portion of the shipment costs in order to keep their inventories in good balance.

San Francisco—A small tonnage of steel scrap will leave this port this week for Japan. Mills in the area have plenty of scrap on hand and there is little current buying. Cast grades are moving to consumers as fast as received with foundries building up reserves.

Seattle—Both steel and cast iron scrap are in fair supply, only bundles continue surplus. Although there is little activity, prices hold. With fairly large backlogs, some of the larger operators have increased inventory, but they are buying with discrimination.

Rails, Cars . . .

Track Material Prices, Page 109

San Francisco—Southern Pacific Co. will acquire 1500 more large box cars. These are on top of 1250 previously ordered, the first of which now are rolling off the assembly line. All will be built in Southern Pacific's own shops.

Porter To Sell Buffalo Steel

Buffalo—H. K. Porter Inc., Pittsburgh, is completing negotiations for sale of its Buffalo Steel Division, Buffalo, to Rochester Iron & Metal Co., Rochester, N. Y. Barring any unforeseen development, transfer of the property is expected to take place around Sept. 30 with a short shutdown likely in October for inventory taking.

No change in production is con-

(*Please turn to page* 130)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 25	$29.00
Aug. 18	29.00
July Avg.	27.42
Aug., 1953	43.40
Aug., 1949	20.86

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	29.00-30.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	*18.00-19.00*
Cut structurals, 3 ft l'gths	31.00-32.00
Heavy turnings	26.00-27.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	34.00-35.00
Charging box cast	32.00-33.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	23.00-24.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
Rails, 2-ft and under	*43.00-44.00*
Rails, 18-in. and under	*44.00-45.00*
Rails, random lengths	*37.00-38.00*
Railroad specialties	*34.00-35.00*

Stainless Steel Scrap

(F.o.b. shipping point)

18-8 bundles & solids	165.00-170.00
18-8 turnings	85.00-90.00
430 bundles & solids	65.00-70.00
430 turnings	50.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	12.00-13.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Low phos.	29.00-30.00
Cut structural plate 2 ft and under	32.00-33.00
Alloy free, short shovel turnings	16.50-17.50
Electric furnace bundles	29.00-30.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	26.50-27.50
Stove plate	33.00-34.00
Heavy breakable cast	25.50-26.50
Unstripped motor blocks	25.00-26.00
Brake shoes	29.00-30.00
Clean auto cast	43.00-44.00
No. 1 wheels	35.00-36.00
Burnt cast	27.00-28.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00
R.R. malleable	41.00-42.00
Rails, 3-ft and under	43.00-44.00
Rails, 18 in. and under	45.00-46.00
Rails, random lengths	40.00-41.00
Cast steel	34.00-35.00
Railroad specialties	34.00-35.00
Uncut tires	36.00-37.00
Angles, splice bars	41.00-42.00
Rails, rerolling	45.00-46.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	30.00-31.00
No. 2 bundles	24.00-25.00
Machine shop turnings	13.00-14.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Low phos.	31.00-32.00
Electric furnace bundles	31.00-32.00

Railroad Scrap

No. 1 R.R. heavy melt.	31.00-32.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*27.00-28.00*
No. 2 heavy melting	25.50
No. 1 bundles	*27.00-28.00*
No. 2 bundles	21.00-22.00
No. 1 busheling	*27.00-28.00*
Electric furnace bundles	28.50
Machine shop turnings	16.00
Mied borings, turnings	16.00
Short shovel turnings	19.00
Structurals & plate	29.00-30.00
Heavy turnings	24.00-25.00
Couplers, springs, wheels	32.00-33.00
Rail crops, 2 ft & under	42.00-43.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Malleable	37.00*
Heavy breakable cast	36.00-36.50
Unstripped motor blocks	nom.
Drop broken machinery	41.00-42.00

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	21.00-21.50
No. 2 heavy melting	*18.00-19.00*
No. 1 bundles	*21.00-21.50*
No. 2 bundles	*15.50-16.50*
Machine shop turnings	*7.00-8.00*
Mixed borings, short turnings	*10.00-11.00*
Low phos. (structural & plate)	*24.00-25.00*
Short shovel turnings	*10.50-11.00*

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	19.00-20.00*

Stainless Steel

18-8 sheets, clips, solids	170.00-175.00
18-8 borings, turnings	70.00-75.00
430 sheets, clips, solids	40.00
410 sheets, clips, solids	30.00

*Nominal.

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	18.50-19.00*
No. 2 heavy melting	15.00-15.50
No. 1 bundles	18.00-19.00
No. 2 bundles	14.00-15.00
Mixed borings, turnings	8.50-9.50
Machine shop turnings	4.00-5.00
Short shovel turnings	10.00-11.00
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	32.00-33.00

* $4 to $4.50 higher for export.

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	25.50-26.50
No. 2 heavy melting	22.50-23.50
No. 1 bundles	25.50-26.50
No. 2 bundles	19.00-20.00
No. 1 busheling	25.50-26.50
Machine shop turnings	11.00-12.00
Mixed borings, turnings	14.50-15.50
Short shovel turnings	14.50-15.50
Cast iron borings	14.50-15.50
Low phos. 18-in.	32.00-33.00

Cast Iron Grades

No. 1 cupola	38.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	44.00

Railroad Scrap

No. 1 R.R. heavy melt.	*31.00-32.00*
Rails, 18-in. and under	43.00-44.00
Rails, random lengths	*36.00-37.00*

CHICAGO

No. 1 heavy melting	29.00-31.00
No. 2 heavy melting	27.00-28.00
No. 1 factory bundles	31.00-32.00
No. 1 dealer bundles	28.00-29.00
No. 2 bundles	22.00-23.00
No. 1 busheling	29.00-31.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	16.00-17.00
Short shovel turnings	16.00-17.00
Cast iron borings	16.00-17.00
Cut structurals, 3-ft	32.00-33.00
Punchings & plate scrap	32.00-33.00
Electric furnace bundles	31.00-32.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Stove plate	28.00-29.00
Unstripped motor blocks	24.00-25.00
Clean auto cast	37.00-38.00
Drop broken machinery	37.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt.	32.00-33.00
R.R. malleable	40.00-42.00
Rails, 2-ft. and under	43.00-44.00
Rails, 18-in. and under	44.00-45.00
Angles, splice bars	37.00-38.00
Rails, rerolling	44.00-45.00

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	40.00
430 turnings	20.00-25.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	22.50
No. 2 heavy melting	18.50
No. 1 bundles	23.50
No. 2 bundles	16.50
No. 1 busheling	21.50
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	9.00
Punchings & plate scrap	24.00

Cast Iron Grades

No. 1 cupola	33.00
Charging box cast	27.00
Stove plate	29.00
Heavy breakable	23.00
Unstripped motor blocks	18.00
Clean auto cast	37.00
Malleable	28.00

BUFFALO

No. 1 heavy melting	26.00-27.00
No. 2 heavy melting	22.00-23.00
No. 1 bundles	26.00-27.00
No. 2 bundles	20.00-21.00
No. 1 busheling	26.00-27.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	16.50-17.00
Short shovel turnings	17.50-18.00
Cast iron borings	16.50-17.00
Low phos.	28.00-28.50

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	35.00-36.00
No. 1 machinery	39.00-40.00

Railroad Scrap

Rails, random lengths	33.00-34.00
Rails, 3-ft and under	40.00-41.00
Railroad specialties	34.50-35.50

BIRMINGHAM

No. 1 heavy melting	19.50-20.50
No. 2 heavy melting	18.50-19.50
No. 1 bundles	18.00-19.00
No. 2 bundles	16.00-17.00
Cast iron borings	15.00-16.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	26.00-27.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	43.50-44.50
Stove plate	40.50-41.50
Bar crops and plate	29.00-30.00
Structural plate 2 ft	29.00-30.00
Unstripped motor blocks	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	26.00-27.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	39.00-40.00
Angles, splice bars	36.00-37.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	25.50
No. 2 heavy melting	23.50
No. 1 bundles	25.50
No. 2 bundles	19.25
Machine shop turnings	*14.00*
Short shovel turnings	*16.00*

Cast Iron Grades

No. 1 cupola	37.00
Charging box cast	29.00
Heavy breakable cast	29.00
Unstripped motor blocks	29.00
Brake shoes	30.00
Clean auto cast	39.00
Stove plate	31.00

Railroad Scrap

No. 1 R.R. heavy melt.	*32.25*
Rails, 18-in. and under	*41.00*
Rails, random lengths	37.00
Rails, rerolling	*45.00*
Uncut tires	32.50
Angles, splice bars	33.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.00
No. 1 bundles	21.00
No. 2 bundles	16.00
No. 3 bundles	13.00
Machine shop turnings	11.50
Mixed borings, turnings	11.50
Short shovel turnings	11.50
Electric furnace, No. 1	32.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*34.00-35.00*
Heavy breakable cast	25.00
Unstripped motor blocks	23.00
No. 1 wheels	21.00
Stove plate (f.o.b. plant)	28.00
Brake shoes	28.00

Railroad Scrap

(Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	20.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	38.00-42.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	43.00-46.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	$22.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
Rails, remelting	32.00
Busheling, new factory: Prepared	20.00
Unprepared	16.00
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.

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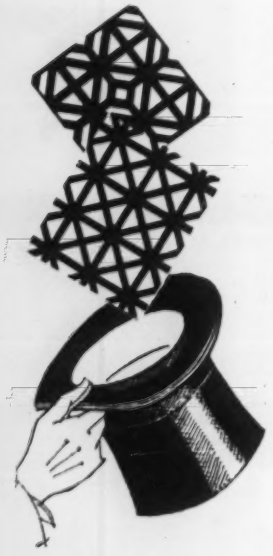

Hendrick Ornametal

More and more metal fabricators are realizing the sales benefits that stem from using Hendrick Ornametal in their product design. Whether you require perforated metal for radiator enclosures, stove panels, kitchen cabinets, clothes and broom closets, lockers or similar applications, you can be certain there's a Hendrick Ornametal design suited for your exact needs.

Lightweight and supplied in special bright finish, Hendrick Ornametal is made of cold rolled steel suitable for painting or plating. For more complete details, contact Hendrick direct.

Hendrick
MANUFACTURING COMPANY

SEE OUR CATALOG IN SWEET'S

30 DUNDAFF ST., CARBONDALE, PA. • *Sales Offices In Principal Cities*

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

---

ACROSS THE NATION....

BART LECTRO-CLAD

Steel Plate, Pipe and Fittings Give Permanent Corrosion Protection at LOW COST!

Hundreds of firms, including pulp and paper, petroleum, chemical processing and other industries have solved critical contamination and corrosion problems, with BART LECTRO-CLAD.

HERE ARE SOME OF THE MAJOR ADVANTAGES OF LECTRO-CLAD PRODUCTS

- **ECONOMY** . . . thickness of nickel tailored to particular applications.
- **TROUBLE-FREE** . . . combination of structural strength of steel and protective qualities of nickel assures positive life long protection with minimum maintenance.
- **PERMANENT** . . . Does not require periodic replacement or repair. Will withstand elevated temperatures and abrasion.
- **VERSATILE** . . . can be sheared, welded or fabricated into all types of processing equipment, storage vessels. LECTRO-CLAD withstands any fabricating process that can be withstood by conventional rolled steel.

LECTRO-CLAD PIPE available in sizes from 1½" to 54" in diameter, 20-foot random lengths.

LECTRO-CLAD SHEET and PLATE available in thicknesses from 11 gauge to ¾", 7 feet x 20 feet.

Write Dept. S-8 for complete details and technical data.
Names of LECTRO-CLAD users on request.

BART MANUFACTURING CORPORATION
229 Main Street **Belleville 9, New Jersey**

Exclusive territories available to qualified distribution organizations.

(*Concluded from page* 127)

templated. Buffalo Steel makes reinforcing bars, fence posts, merchant bars and other similar steel products. The plant's capacity is about 70,000 tons annually.

Rochester Iron & Metal Co. has two scrap yards and two steel and aluminum warehouses in Rochester.

Iron Ore . . .

Iron Ore Prices, Page 125

Cleveland — Consumption of iron ore continues to move at a slow pace and stockpiles continue to rise, according to July figures released by Lake Superior Iron Ore Association. Total gross tons swallowed up by U. S. furnaces in July were 4,892,812, well below the 5,152,443 tons used in June and the 7,829,445 tons in July, 1953. Cumulative total for 1954 so far is only 38,026,983 tons, compared with 53,795,300 in the same 1953 period.

Meanwhile, total ore stocks in the U. S. rose to 38,868,521 gross tons as of Aug. 1. A year ago the total was 36,886,844 tons.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1400 tons, mess and dormitory buildings, Air Force base, Portsmouth, N. H., to Fabricators Steel Corp., Blandensburg, Md.; Davison Construction Co., Manchester, N. H,. general contractor.

1250 tons, apartment building, 35 Park Ave., from Campagna Construction Co., New York, to Grand Iron Works, New York.

980 tons, manufacturing plant, Lithium Corp. of America, Bessemer City, N. C., to Bristol Steel & Iron Co., Bristol, Va.; Southeastern Construction Co., Charlotte, N. C., general contractor.

665 tons, wharf and warehouse, National Can Co., Baltimore, to Bethlehem Steel Co., Bethlehem, Pa., through Consolidated Engineering Co., Baltimore, general contractor.

503 tons, Passaic Division headquarters, Public Service Electric & Gas Co., Clifton, N. J., from John W. Ryan Construction Co., New York, to Elizabeth Iron Works, Elizabeth, N. J.

460 tons, warehouse, Key Food Stores, Brooklyn, N. Y., from Michael Contracting Co. to Stanley Structural Steel.

425 tons, warehouse & garage, Grand Union Co., Waterford, N. Y., from R & S Construction Co., New York, to Jones McKinney, New York.

292 tons, factory and office building, Milford, Conn., Bridgeport Thermostat Division, Robertshaw-Fulton Controls Co., Bridgeport, Conn., to Belmont Iron Works, Philadelphia.

249 tons, alteration and addition, School of Nursing, Roosevelt Hospital, New York, from Paul Tishman Inc., New York, to Elizabeth Iron Works, Elizabeth, N. J.

232 tons, girder viaduct, Norwich, Conn., Brunalli Construction Co., Southington, Conn. to American Bridge Division, U. S. Steel Corp., Pittsburgh.

210 tons, industrial center, Cabot, Cabot & Forbes Inc., Farrington Mfg. Co., lessee, Needham, Mass., to West End Iron Works, Cambridge, Mass.; Vappi & Co., Cambridge, general contractor.

200 tons, high school, Agawam, Mass., to New England Iron Works, New Haven, Conn.; J. G. Roy & Sons Co., Springfield, Mass., general contractor; 120 tons, bar joists to Macomber Co. and reinforcing bars to Fabricated Steel Products Co., Quincy, Mass.

200 tons, Philadelphia approach to Philadelphia-Gloucester bridge; low bidder, Conduit & Foundation Corp., Philadelphia.

197 tons, spur track and trestle, Central Islip State Hospital, Islip, N. Y., from Horn Construction Co., Long Island City, N. Y., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

190 tons, administration building, Shell Oil Co., Anacortes, Wash., to Isaacson Iron Works, Seattle.

170 tons, high school, East Windsor, Conn., to Berlin Construction Co., Berlin, Conn.; Industrial Construction Co., Hartford, Conn., general contractor; reinforcing to Scherer Steel Co., Hartford.

150 tons, high school, Longmeadow, Mass., to Groisser & Shlager Iron Works, Somerville, Mass., through E. J. Pinney Co. Inc., West Springfield, Mass., general contractor.

150 tons, addition, high school, Walpole, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Wexler Construction Co., Newton Highlands, Mass., general contractor.

150 tons, operations building and facilities, Ft. George G. Meade, Maryland, to Reading Steel Products Co., Reading, Pa.; Charles H. Thompkins Co., Washington, general contractor.

135 tons, bar joists and reinforcing bars, food industry building, Clemson College, Clemson, S. C., to Ceco Steel Products Co., Atlanta, and Connors Steel Co., Birmingham (bars); Daniel Construction Co., Clemson, general contractor.

120 tons, addition to Ford plant, Seattle; to Isaacson Iron Works, that city.

100 tons, pattern storage building, S. Morgan Smith Co., York, Pa., from Dietz Smith, general contractor, to William Christianson Co., both of that city.

100 tons, shapes and bars, office building, Bangor Publishing Co., Bangor, Me., to Groisser & Shlager Iron Works, Somerville, Mass., Consolidated Constructors Inc., Portland, Me., general contractor; bars to Bancroft & Martin Rolling Mills Co., South Portland, Me.

STRUCTURAL STEEL PENDING

3000 tons, office building, Travelers Insurance Co., Hartford, Conn.; steel bids in with owner; George A. Fuller Co., New York, general contractor.

2125 tons, highway structures, Indiana Toll Road Commission; bids Sept. 8, Indianapolis.

1385 tons, angles, Navy; bids Sept. 3, General Stores Supply Office, Philadelphia.

1235 tons, two plate girder and one I-beam bridge, West Whiteland, Pa.; also 125 tons, reinforcing bars; bids in.

800 tons, superstructure section, contract J-2, Central Artery, Boston; bids Sept. 14, state department of public works, Boston.

760 tons, bridgework, Delaware State Highway Department, Basin Corner, New Castle county, Delaware; bids Sept. 8.

585 tons, highway structures, Indiana Toll Road Commission; bids Sept. 1, Indianapolis.

350 tons, addition and garage, Yorktown Hotel, York, Pa.; bids Aug. 23.

225 tons, state highway bridge, Montour county, Pennsylvania, also 115 tons, reinforcing bars; bids in.

200 tons, track relocation and dock alterations, Puget Sound Navy Yard, Washington state; bids in.

118 tons, including reinforcing, Cedar river bridge, Renton, Wash.; bids to Wiley Crook, city clerk, Sept. 7.

100 tons, addition, Veterans Administration Hospital, Lebanon, Pa.; bids Sept. 14.

REINFORCING BARS . . .

REINFORCING BARS PLACED

5000 tons, operations building and facilities, Ft. George G. Meade, Maryland, to Bethlehem Steel Co., Bethlehem, Pa.; Charles H. Thompkins Co., Washington, general contractor.

1100 tons, warehouse, United States Rubber Co., Naugatuck, Conn., to Topper & Griggs Inc., East Hartford, Conn.; W. J. Megin Inc., Naugatuck, general contractor.

1000 tons, station hospital, Ft. Knox, Ky., to Laclede Steel Co., St. Louis; George A. Fuller Co., Washington, general contractor.

780 tons, wharf and warehouse, National Can Co., Baltimore, to Bethlehem Steel Co.,

CLASSIFIED

Help Wanted

DROP AND UPSET FORGE SUPERINTENDENT for Southwest plant with total employed 130. Must be able to supervise and direct die making, production on board and steam hammers and upsetters producing hollow forgings. Enclose photograph, full experience with references and salary brackets in past employment. Opportunity for fully qualified applicant. Reply Box 112, STEEL, Penton Building, Cleveland 13, Ohio.

Prominent Eastern special steel maker needs SALES DEVELOPMENT METALLURGIST to concentrate on high temperature alloys and related stainless steel problems. Must travel. State age, marital status, education, previous experience and salary requirements. Reply Box 113, STEEL, Penton Building, Cleveland 13, Ohio.

Positions Wanted

PLANT MANAGER
M.I.T. Engineering Graduate with Proven Record in Plant Supervision and Control of Related Functions Dealing with Production Planning, Tooling, Quality, Maintenance, and Industrial Engineering. Reply Box 100, STEEL, Penton Building, Cleveland 13, Ohio.

Representatives Wanted

Manufacturers of heavy duty Integral Horsepower Polyphase motors for thirty years desire sales representation in Pittsburgh, Cleveland and Buffalo districts. Reply Box 106, STEEL, Penton Building, Cleveland 13, Ohio.

MANUFACTURERS AGENCY
Major Midwest Drop Forging Company, with complete facilities for producing up to 400 pound steel forgings, has opening for established aggressive manufacturers agency. Reply Box 111, STEEL, Penton Building, Cleveland 13, Ohio.

UNDISPLAYED CLASSIFIED RATES

ALL CLASSIFICATIONS
Other than "Positions Wanted"

	Set Solid	All Capitals	All Caps Leaded
50 words or less	$15.00	$19.30	$23.40
Each additional word	.30	.38	.47

POSITIONS WANTED
(No Agency Commission or Discount)

25 words or less	$ 3.60	$ 4.50	$ 5.40
Each additional word	.14	.18	.22

Cash with order necessary on "Positions Wanted"

Keyed address takes seven words. Replies forwarded without charge.

All classified pages are 3 columns, each column 2¼".

Forms close 10 days prior to publication date.

STEEL *The Weekly Magazine of Metalworking*
Penton Building, Cleveland 13, Ohio

RAILWAY EQUIPMENT
FOR SALE
Used — As Is — Reconditioned
RAILWAY CARS—
ALL TYPES
"SERVICE-TESTED"
FREIGHT CAR REPAIR PARTS
For All Types of Cars
LOCOMOTIVES
Diesel, Steam, Gasoline
Diesel-Electric
RAILWAY TANK CARS
STORAGE TANKS
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Cleaned and Tested
CRANES
Overhead and Locomotive
RAILS
New or Relaying
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Chicago 33, Illinois
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New York 7, New York
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"ANYTHING containing IRON or STEEL"

PLANT SUPERINTENDENT
For Northern Ohio steel and alloy plate fabricating plant employing approximately fifty men. Must be capable of complete plant supervision and be thoroughly familiar with modern welding equipment and practices including code requirements. Require a good organizer, able to handle men, control costs and get results. Full details and references required.
Reply Box 109, STEEL
Penton Building Cleveland 13, Ohio

RELAY RAILS
AND ACCESSORIES
Largest Inventory on Pacific Coast
DULIEN STEEL PRODUCTS, INC.
OF WASHINGTON
P. O. Box 3386 Seattle 14, Wash.

MACHINERY—FOR SALE
8" x 8" x 1" ANGLE SHEAR
L & A Model C. Double clutch. 15 H.P. motor. Guaranteed in Excellent Condition. LOW PRICE.
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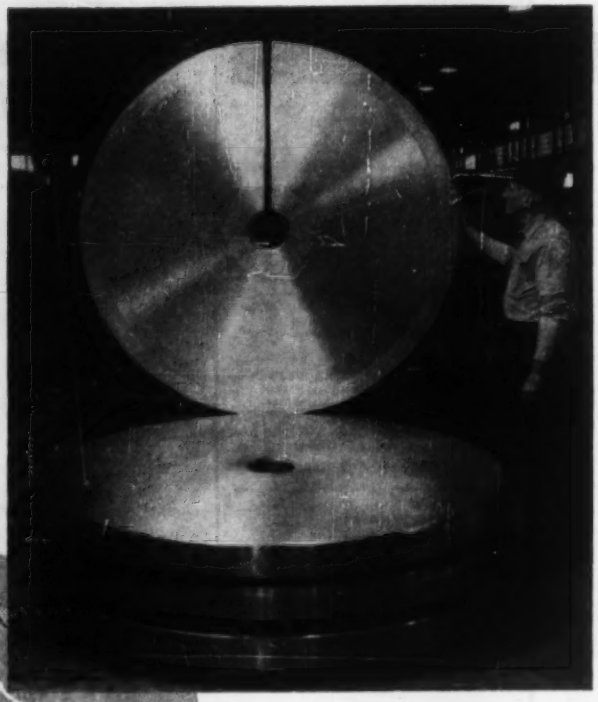
WANTED
Spring Steel Tempered 30/40000 lbs.
⅛" x .018/.030—Coils Any Finish
Must be Reasonable
Can Use Several Roll Feeds—Stock Straighteners—Coil Cradles
SEABOARD STEEL COMPANY, INC.
10 Fair Street New Haven, Connecticut

IF YOU HAVE CAPACITY OPEN,
why not line up sub-contract work through an advertisement in this section? For additional information or rates, write STEEL, Penton Bldg., Cleveland 13, O.



Unusual
IS THE WORD
FOR THESE
STAINLESS STEEL
BLANKS . . .

Not
Unusual
IN PRODUCTION
AT . . .

No matter how you look at it, these heavy gauge Blanks are unusual.

Unusual because they are made of Type 302 stainless steel. Unusual because they are 5" thick x 7¾" ID x 78½" OD and weigh approximately 7000 pounds each. Unusual because each required special cutting and machining to produce its rough machined shape. But such jobs are *not unusual* at G. O. Carlson, Inc.

As specialists in working stainless steel, Carlson provides an unique service for you

. . . by having skilled workers produce your stainless shapes.

. . . by making full use of the specialized cutting and machining equipment at Carlson.

. . . by giving you exactly what you want "on time" to keep your production running smoothly.

. . . by eliminating shipping charges on material you cannot use.

Put your stainless steel plate requirements in good hands . . . that means, G. O. Carlson, Inc.

Stainless Steels Exclusively

G. O. CARLSON, INC.

Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)

THORNDALE, PENNSYLVANIA

District Sales Offices in Principal Cities

Bethlehem, Pa., through Consolidated Engineering Co., Baltimore, general contractor.

500 tons, estimated, shapes and bars, laboratory building, Camp Detrick, Maryland, to Vulcan Rail & Construction Co., Wheeling, W. Va., and Hudson Supply & Equipment Co., Washington, (bars); J. D. Hedin Co., Washington, general contractor.

320 tons, hospital, diocese of St. Augustine, Florida, to Virginia Steel Co., Miami, Fla.; Gust K. Newberg Construction Co., Miami, general contractor.

290 tons, addition, high school, Walpole, Mass., to Northern Steel Inc., Medford, Mass.; Wexler Construction Co., Newton Highlands, Mass., general contractor.

250 tons, mess and dormitory buildings, Air Force base, Portsmouth, N. H., to Fabricated Steel Products Co., Quincy, Mass.; Davison Construction Co., Manchester, N. H., general contractor.

200 tons, building, state hospital, Howard, R. I., to Plantations Steel Co., Providence, R. I.; Malony & Bubien Construction Co., Providence, general contractor.

160 tons, industrial center, Cabot, Cabot & Forbes, Inc., Farrington Manufacturing Co., lessee, Needham, Mass., to Concrete Steel Co., Boston; Vappi & Co. Inc., Cambridge, Mass., general contractor; 335 tons, bar joists, to Truscon Steel Division, Republic Steel Corp., Boston.

150 tons, manufacturing plant, Lithium Corp. of America, Bessemer City, N. C., to Easterby & Muman, Atlanta; Southeastern Construction Co., Charlotte, general contractor.

REINFORCING BARS PENDING

2500 tons, hydro-electric power plant, Cumberland river, Cheatham county, Tennessee; bids Sept. 29, Corps of Engineers, Nashville.

1170 tons, highway structures, Indiana Toll Road Commission; bids Sept. 8, Indianapolis.

750 tons, relocation crane tracks and alterations, No. 5 drydock, Puget Sound Navy Yard; Morrison-Knudsen Co., Seattle, low to 13th Naval District, Seattle.

550 tons, 20-30-ft lengths, Navy; bids in, Purchasing Office, Washington.

335 tons, highway structures, Indiana Toll Road Commission; bids Sept. 1, Indianapolis.

100 tons, military installation, Kitsap county, Washington; bids to U. S. Engineer, Seattle, Sept. 13.

100 tons, two highway structures, Snohomish county, Washington; Northwest Construction Co., Seattle, low.

PLATES . . .

PLATES PLACED

300 tons, two floating roof tanks, New Haven, Conn., The Texas Co., New York, to Chicago Bridge & Iron Co., Chicago.

140 tons, Allied Chemical & Dye Corp., General Chemical Division, New York, 7 propane tanks (18,000 gal.), Danville, Ill., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, steel standpipe, Waltham, Mass., to Chicago Bridge & Iron Co., Chicago.

PLATES PENDING

4300 tons sheet piling, for Seward, Alaska, ocean terminal; bids in to General Services Administration, Seattle.

203 tons, armor plate, Navy, east and west yards; bids Sept. 1, General Stores Supply Office, Philadelphia.

PIPE . . .

CAST IRON PIPE PENDING

1000 tons, also alternatives, system expansion; bids to Fairbanks, Alaska, Aug. 25.

RAILS, CARS . . .

RAILROAD CARS PLACED

Long Island, two rail-diesel cars, Montauk branch, to Budd Co., Philadelphia.

North American Car Co., ten 70-ton phosphate cars, to Thrall Car Mfg. Co.

Texas Natural Gas Transportation Co., 150 special tank cars for distribution of LP gas, to General American Transportation Corp., Chicago.

RAILROAD CARS PENDING

Gulf, Mobile & Ohio, 100 fifty-ton pulpwood cars.

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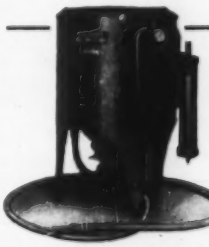
PANGBORN BLASTS
by don herold

COST-CUTTING STORY OF THE PANGBORN BLAST CLEANING MACHINE



Pangborn Blast Cleaning Machine —available in six types, stationary or portable—delivers efficient, low-cost maintenance in any plant. $1888 up.

For details, write: PANGBORN CORP., 1600 Pangborn Blvd., Hagerstown, Maryland.

Pangborn

BLAST CLEANS CHEAPER
with the right equipment for every job

50th Anniversary Medallion

included.
Ordnance Storage Contract Awarded
A contract to move, clean and store more than 3,000 machine tools from Michigan, Indiana and Ohio factories to Fort Custer has been signed with Commercial Contracting Corp., Detroit, Col. Edward D. Mohlere, Detroit Ordnance District commanding officer, announced today.
Work will begin immediately, he said. Storage will be in 96 buildings scattered throughout the fort.
Mohlere said the program will save taxpayers "millions of dollars in capital equipment that might otherwise have to be replaced," and also "will cut in half the time necessary previously to go into full-scale production."

Hand CCC your "Mothball Headaches!"

— From Detroit News, May 22

We have processed more than a HALF-MILLION machine tools and industrial equipment for the U. S. Government and prime contractors since 1945.

Removing, processing, transporting and storing millions of dollars' worth of production machinery is no job for amateurs. It calls for highly specialized equipment and skills, plus constant supervision by a firm of financially responsible experts. Otherwise it can be a king-sized headache!

That's why the U.S. Government and scores of manufacturers have entrusted the handling of equipment valued at more than a billion dollars to Commercial Contracting Corporation. We have the facilities and know-how to handle anything from the most delicate precision instruments to giant presses with minimum interruption and maximum security.

If you're dreading the headache of "mothballing"—or *any* plant program involving the removal, movement or installation of machinery – let CCC do the worrying. *That's our specialty.* No matter how large or small the job, you can be confident we'll do it *quickly, expertly, economically*—just as we've served:

• U.S. Air Force • Defense Plant Division, R.F.C. • Detroit Ordnance District • U.S. Navy Bureau of Aeronautics • Detroit Arsenal • Packard • Pittsburgh Steel • Ford • Aluminum Co. of America • U. S. Rubber • Continental Motors • General Motors • Bohn Aluminum • Chrysler

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Write for complete information without obligation, Dept. M-5,

COMMERCIAL CONTRACTING CORPORATION • ***General Contractors***

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CCC COMMERCIAL CONTRACTING CORPORATION

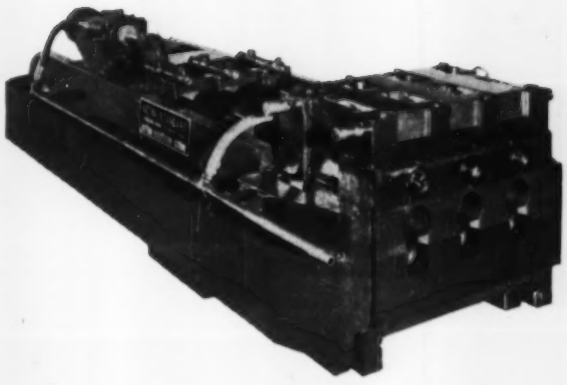
announcing . . .

NEW DRAWBENCH DEVELOPMENT

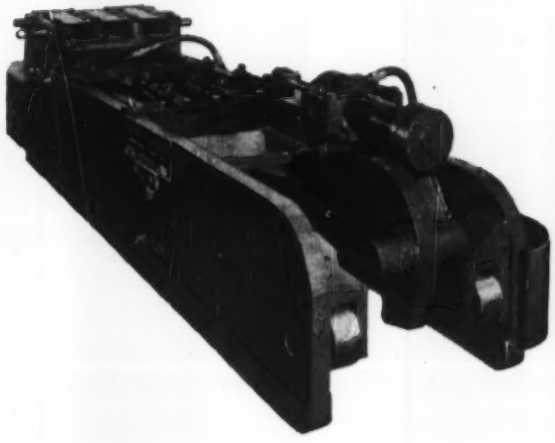
AIR

OPERATED CARRIAGES

AND HOOK



Says an Aetna drawbench customer—"Applying air to the carriages and hook is the greatest thing you have ever done for me."



Aetna has equipped ten benches with air-operated carriages and hook. What about yours?

positive gripping . . .
positive hooking . . .

● Tubes can be drawn at least six inches before air pressure releases the gripping cylinders. This six-inch margin assures a positive grip on tubes. Another advantage — the use of air permits close-up gripping to die stand although the carriage action does not require actual contact with die stand.

Both the carriage and air hook cut down on breakage and maintenance because they eliminate the chief cause — slam-bang action. The cylinder lets the hook down gently and smoothly.

Air-operated carriages, which include many patented features, can be adapted to existing benches of any size. Aetna has interchangeable heads for Aetna's own benches or can adapt the new head to existing benches of other makes. The air-operated heads and hooks can be used for single, double, triple, four- or five-draw.

THE AETNA-STANDARD ENGINEERING COMPANY • PITTSBURGH, PA.

Aetna-Standard

PLANTS IN WARREN, OHIO • ELLWOOD CITY, PENNSYLVANIA

GOOD EQUIPMENT BRINGS DOWN PRODUCTION COSTS

SUBSIDIARY and ASSOCIATED COMPANIES

Head Wrightson Machine Company, Ltd., Middlesbrough, England — Great Britain, Finland, Sweden, Norway, Denmark, Union of South Africa, Northern and Southern Rhodesia.
Aetna-Standard Engineering Company, Ltd., Toronto, Ontario, Canada.
M. Castellvi, Inc., New York, N. Y. — Mexico, Central and South America.
Societe de Constructions de Montbard, Paris, France — France, Belgium, Holland, Luxembourg, Switzerland.
Demag Aktiengesellschaft, Duisburg, Germany — Germany, Austria, Yugoslavia, Greece, Turkey, Egypt.
Compagnia Italiana Forme Acciaio, Milano, Italy — Italy.
Aetna-Japan Company, Ltd., Tokyo, Japan — Japan.
Hale & Kullgren, Inc., Akron, Ohio — Representative for the Rubber Industry.
Standard Engineering Company, Ellwood City, Pa.
Trans-World Traders, Pittsburgh, Pa.

Designers and Builders to the Ferrous, Non-Ferrous, Leather, Rubber, and Plastic Industries

Straightens 10½" solid bars— takes the loads on TIMKEN® bearings

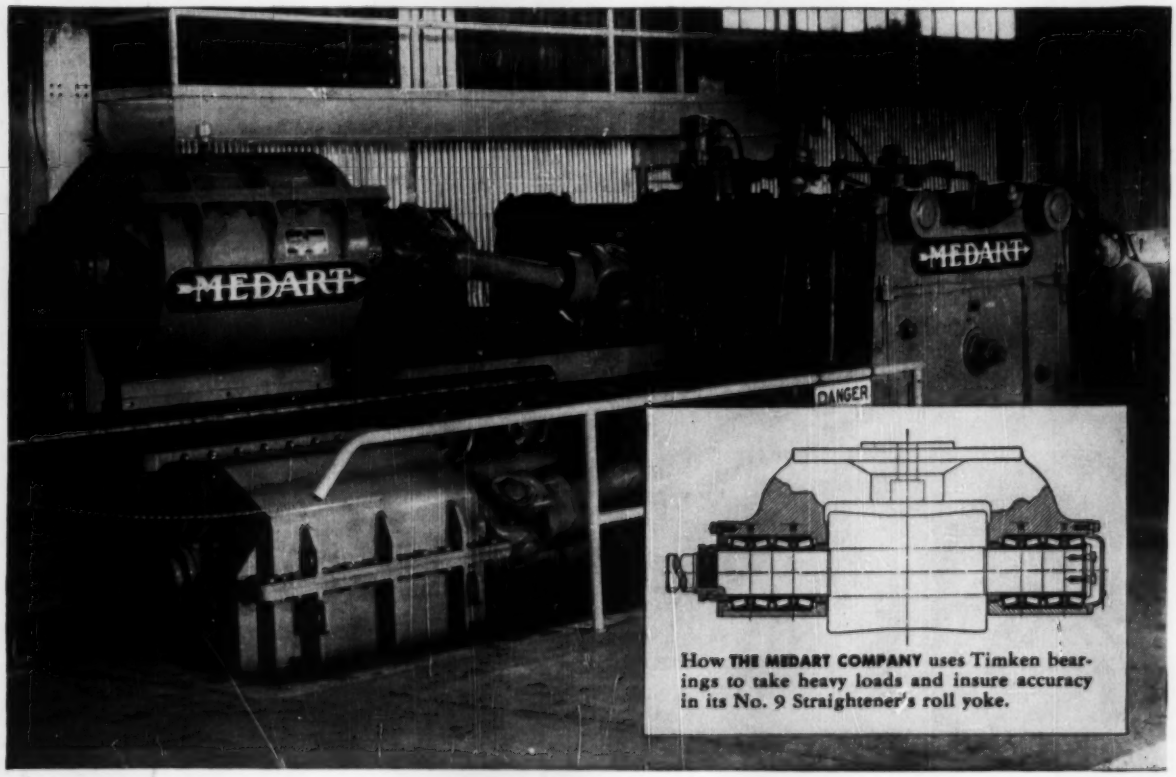
THIS 2-roll Rotary Tube Bar Straightener was built by The Medart Company for an Ohio steel mill. Special features of this machine are a power operated pressure control and an open side to the gear box to facilitate unloading.

To take the heavy loads of straightening 10½" diameter solid bars, Timken® tapered roller bearings are used on the straightening roll yoke. Timken bearings have load carrying capacity to spare because they carry loads on the lines of contact between the rollers and races.

In the machine's gear box, Timken bearings keep shafts in rigid alignment, insure accurate gear meshing. The tapered design of Timken bearings enables them to take radial and thrust loads in any combination, eliminates the need for extra thrust devices.

All in all there are 69 Timken bearings in this Medart straightener. Like other machine builders, The Medart Company knows it gets full value in its machines by using Timken bearings. We take every precaution possible to insure the quality of our bearings. We even make our own steel. Whether you build or buy machines, specify bearings with the trade-mark "Timken". You'll get the most for your money. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How **THE MEDART COMPANY** uses Timken bearings to take heavy loads and insure accuracy in its No. 9 Straightener's roll yoke.

DESIGN LEADERSHIP

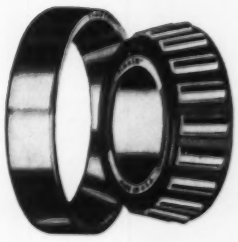
The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ↓ AND THRUST →○← LOADS OR ANY COMBINATION →✳←